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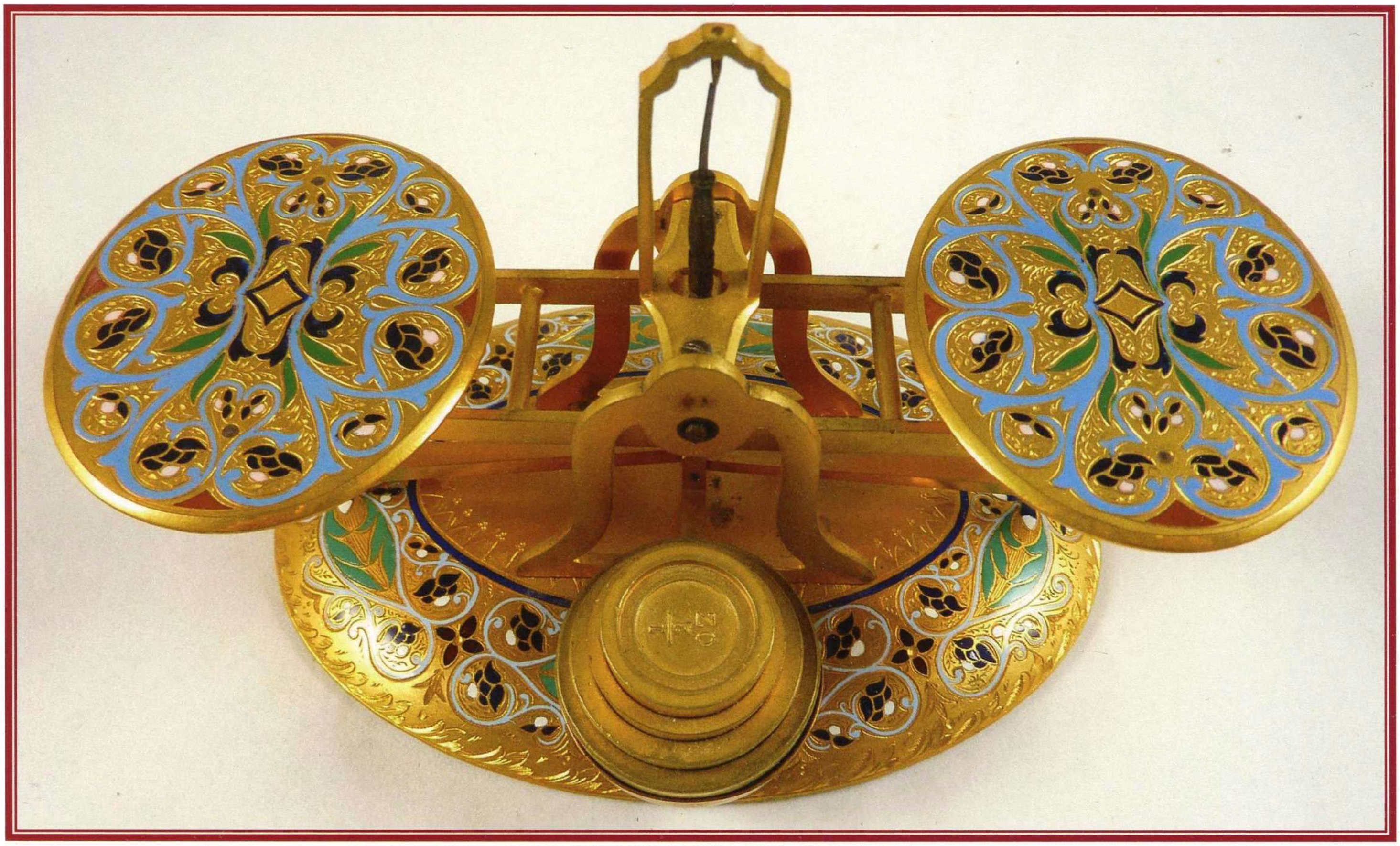

Cover Picture

This unmarked British letter scale is made from gilded brass. The oval base, measuring 4” deep by $5^{3}/_{4}$” long, and letter plates are engraved and covered with a design of blue, green, white, navy, burgundy and brown enamel. A one inch border on the outer part of the base repeats the design elements of the plates, with a narrow ring of navy separating the border from the balance of the base. The inside of the navy ring is lined with etching in a flower motif.

The weights are 2 oz, 1 oz, $^{2}/_{3}$ oz and ½ oz. Given the inclusion of the $^{2}/_{3}$ oz weight, this is an English scale made to include postage to France and some other countries and the missing weight on the top of the stack was a $^{1}/_{3}$ oz. Postal rates in $^{1}/_{3}$ oz increments were in use from 1869 to 1875. The scale measures 4” tall at its standard.

Eric & Judy Soslau Collection.

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An Unexpected Find

BY THOMAS ALLGEIER

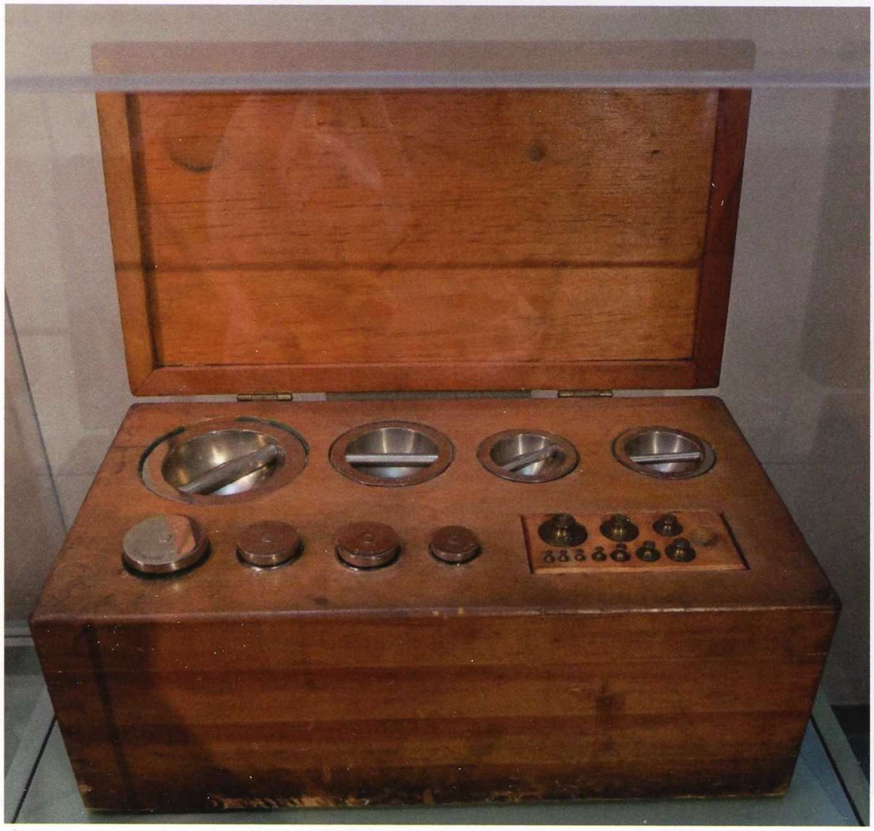
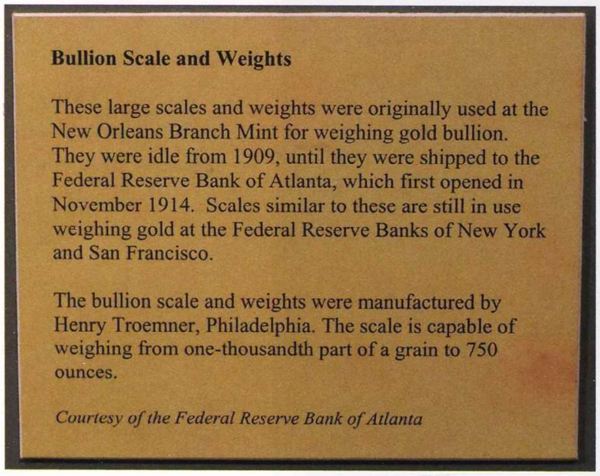


Figure 1. ▲▲ Set of large bullion weights by Henry Troemner.

During a recent vacation - a road trip through the southern US of A - I found myself in New Orleans. We all know that part of the world gets battered by hurricanes and floods, but even in the absence of such extremes of weather, a thunderstorm can quickly brew up and produce 15 minutes or so of deluge. Such an event occurred just as I came to the end of a walkabout tour of the famous French Quarter. As luck would have it, our guide had just pointed out a building across the road which he said was the Old Mint Museum. It was open, entry was free and it offered shelter from the elements, which by that time were really causing some concern - the rain had turned almost into a solid wall of water. Surely there would be something worth having a look at?

It turns out this place, amongst other things, houses a jazz museum, a performance venue and on the ground floor the remnants from when the building was actually operating as a mint. From 1838 to 1861 and from 1879 to 1909 it was a branch mint of the United States. A few pieces of the actual minting machinery remain, but imagine my surprise when I found several balances, weight sets and an automatic coin weigher in glass cases!



Bullion Scale and Weights

These large scales and weights were originally used at the New Orleans Branch Mint for weighing gold bullion. They were idle from 1909, until they were shipped to the Federal Reserve Bank of Atlanta, which first opened in November 1914. Scales similar to these are still in use weighing gold at the Federal Reserve Banks of New York and San Francisco.

The bullion scale and weights were manufactured by Henry Troemner, Philadelphia. The scale is capable of weighing from one-thousandth part of a grain to 750 ounces.

Courtesy of the Federal Reserve Bank of Atlanta

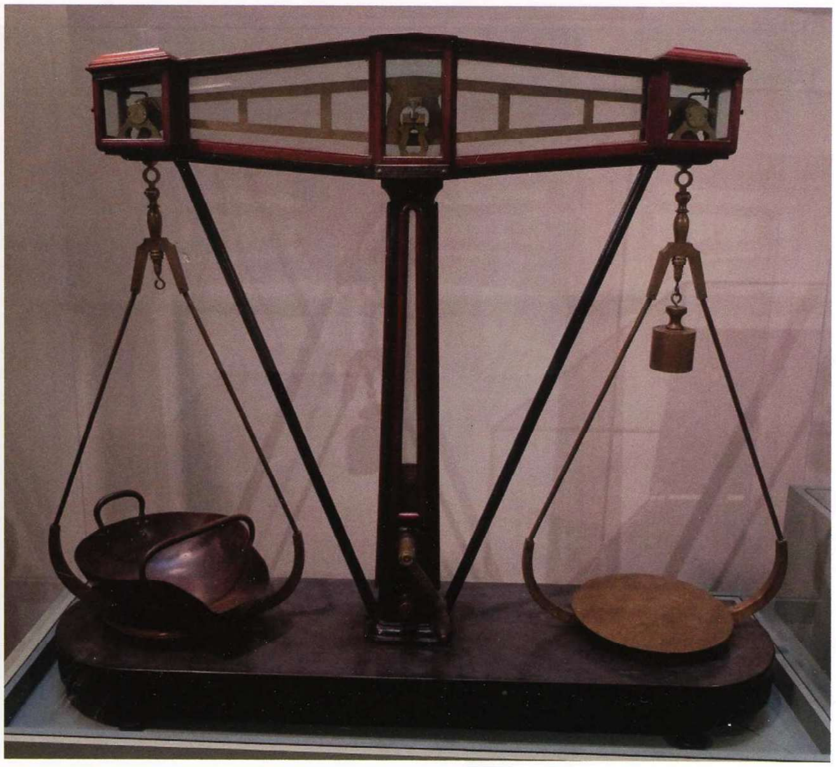


Figure 2. ▲➤ Large bullion balance by Henry Troemner.

As can be seen, these were originally used at New Orleans, but served a stint at the Atlanta Federal Reserve bank. We may need to reserve judgment on the claim of resolution, though: 65 micrograms on a machine that holds up to 23 kgs in each pan is perhaps pushing it a bit!

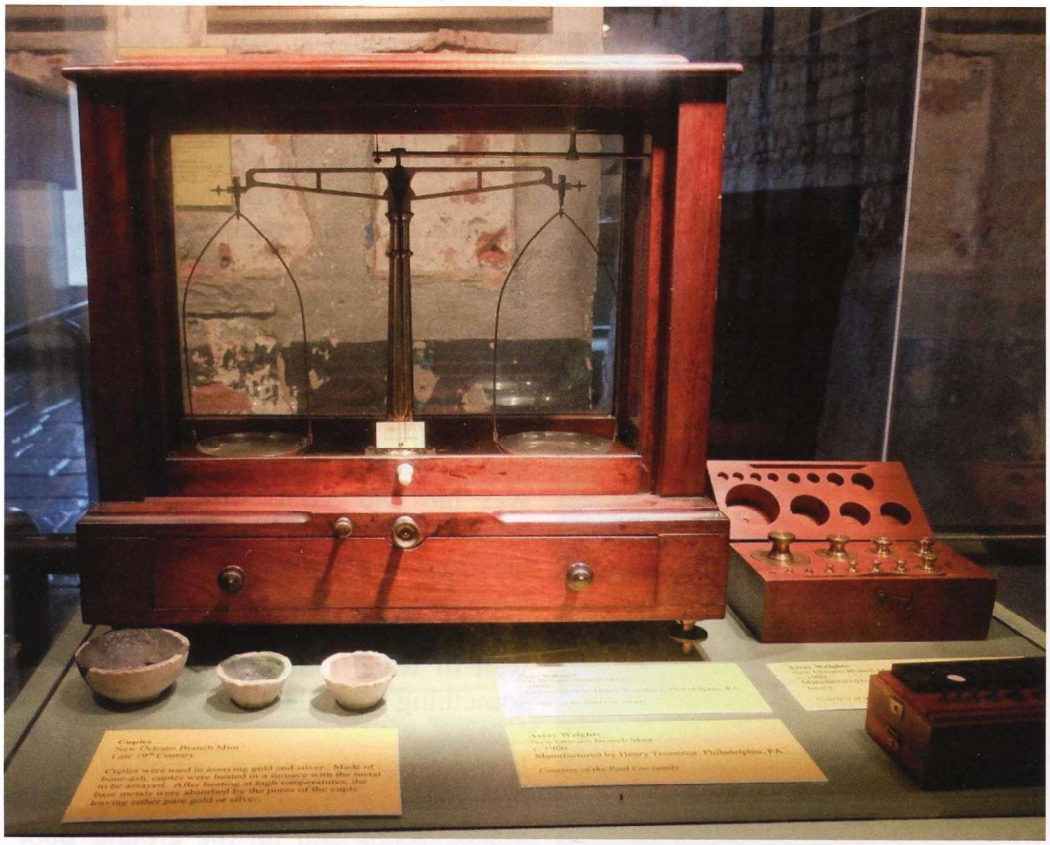
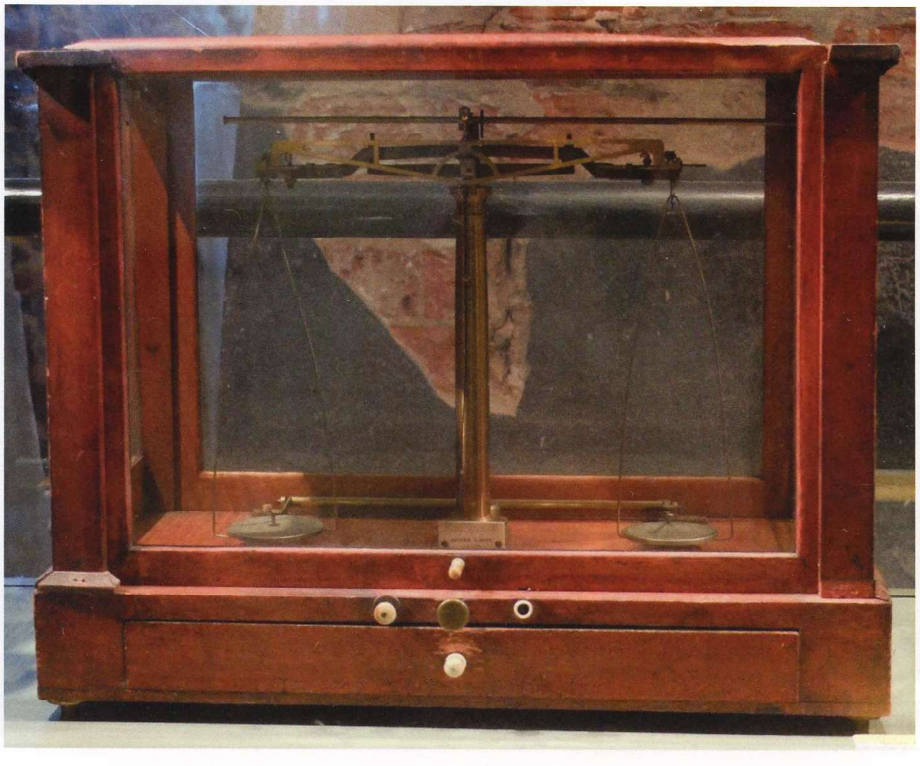

Cupels
New Orleans Branch Mint
Late 19th Century
Cupels were used in assaying gold and silver. Made of bone-ash, cupels were heated in a furnace with the metal to be assayed. After heating at high temperatures, the base metals were absorbed by the pores of the cupel leaving either pure gold or silver.
Assay Weights
New Orleans Branch Mint
c. 1900
Manufactured by Henry Troemner, Philadelphia, PA
Courtesy of the Paul Coe family

Figure 3. ≺≺ Assay scale and weights by Henry Troemner.

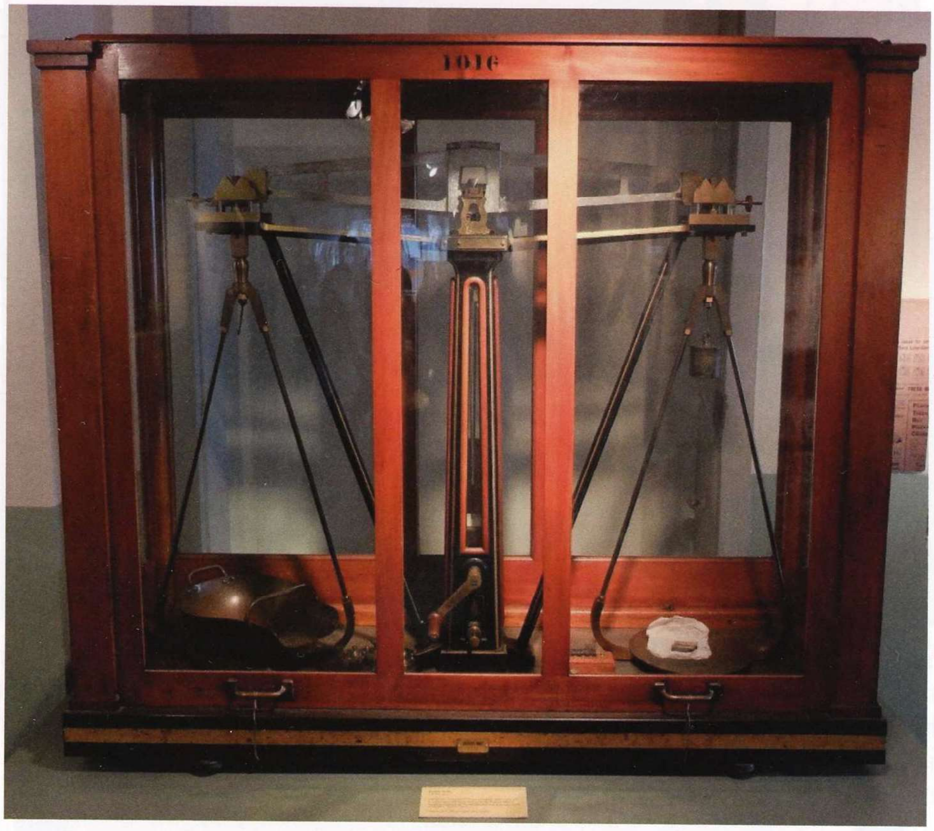
The building also housed an assay office at one time, from which period the assay scales and weights might originate. A second assay balance was made by Becker (Figure 4):

Figure 4. ≻≻



Another large bullion balance by Henry Troemner (Figure 5). The label on the case states "Denver Mint".

Figure 5. ➢➢



Most probably it was transferred there for a time after operations ceased at New Orleans. The only fly in the ointment, and rather unusual in my experience with US museums, was that, apart from some small descriptive labels near the exhibits, no further details about them or even the mint as such were obtainable. The lady at the front desk explained that while leaflets and other written material were available for the jazz place, nothing of the kind had been produced for the mint part.

This is particularly sad in view of the automatic coin weighing machine (Figure 6) on display there, a piece of machinery very rarely encountered on display. No manufacturer was identifiable.

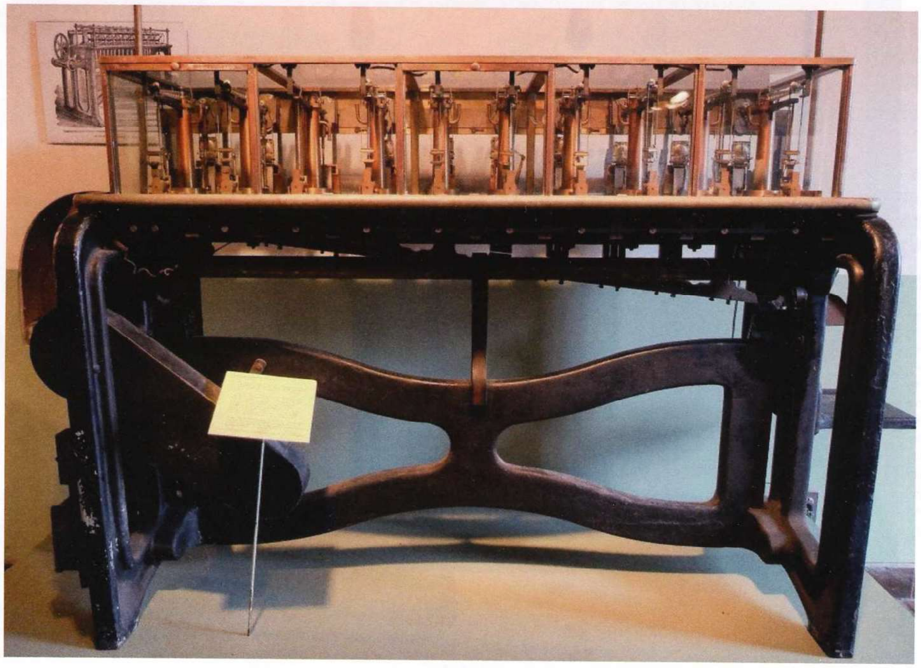


Figure 6. ➢➢ A multi-station automatic coin weigher.

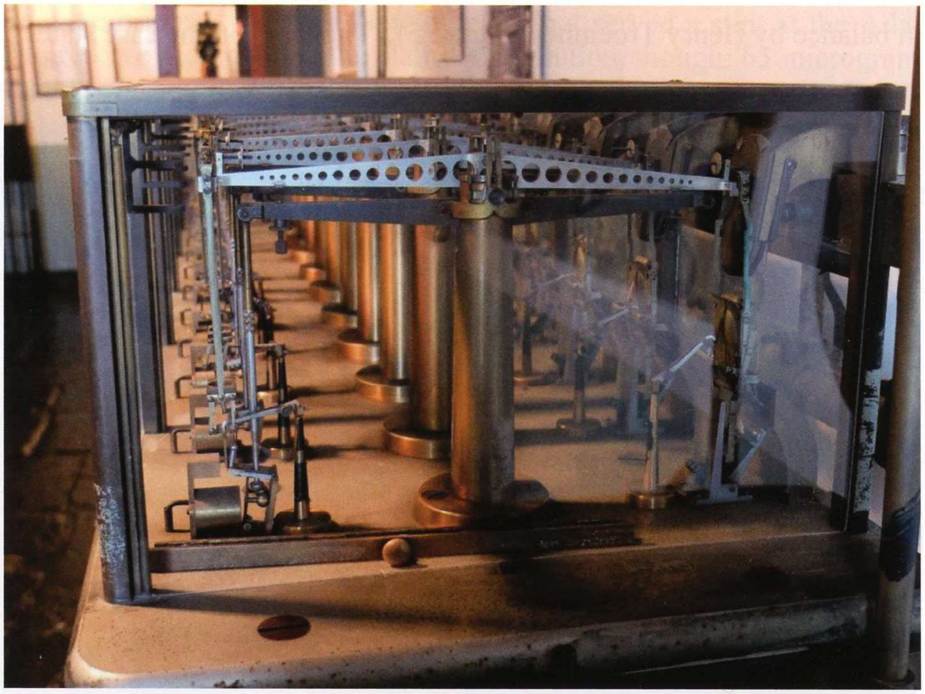
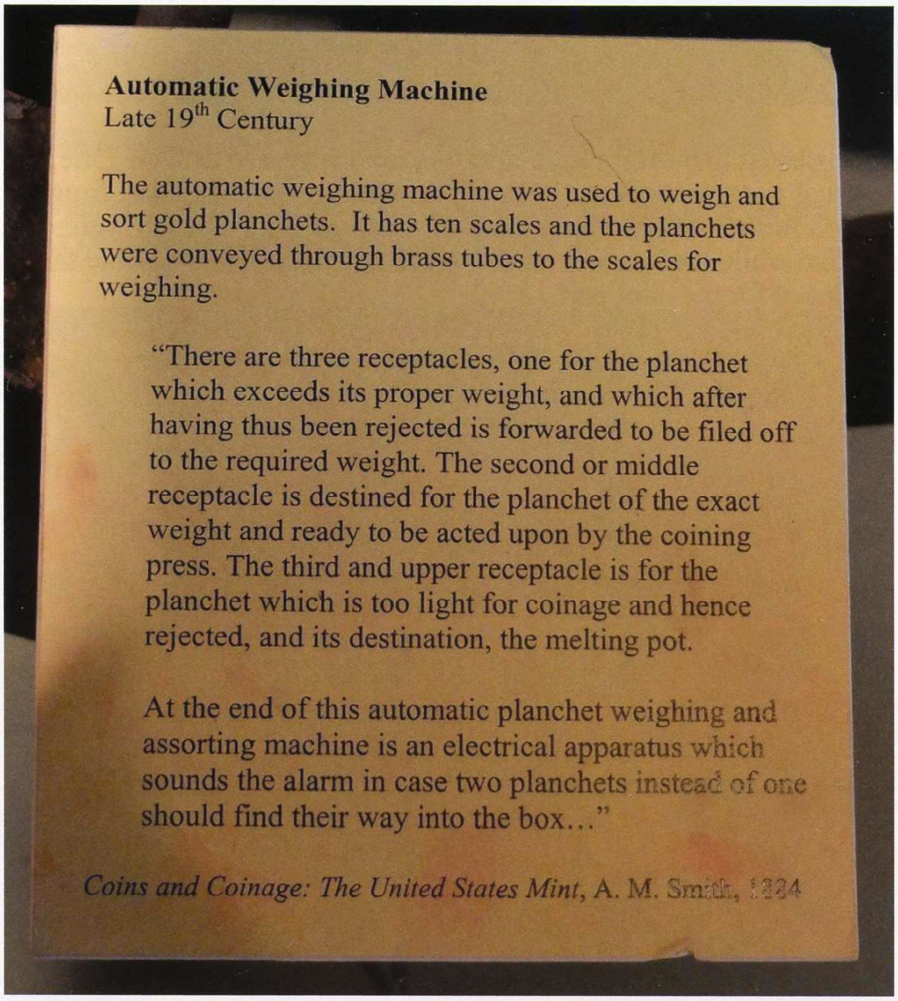


Figure 7. ⩓⩓ End-on view of the coin weigher showing the beams.



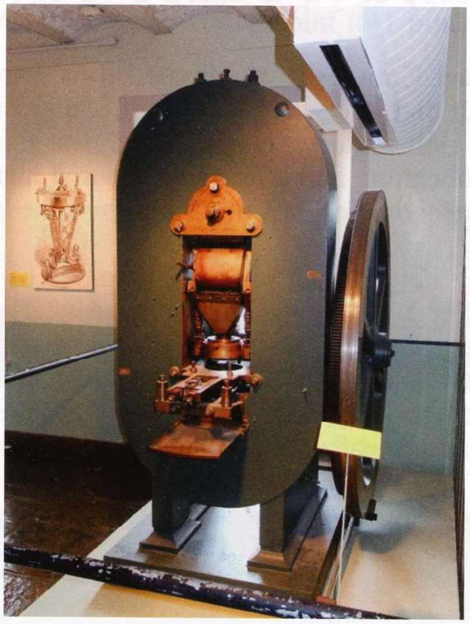
Automatic Weighing Machine
Late 19th Century

The automatic weighing machine was used to weigh and sort gold planchets. It has ten scales and the planchets were conveyed through brass tubes to the scales for weighing.

> "There are three receptacles, one for the planchet which exceeds its proper weight, and which after having thus been rejected is forwarded to be filed off to the required weight. The second or middle receptacle is destined for the planchet of the exact weight and ready to be acted upon by the coining press. The third and upper receptacle is for the planchet which is too light for coinage and hence rejected, and its destination, the melting pot.
>
> At the end of this automatic planchet weighing and assorting machine is an electrical apparatus which sounds the alarm in case two planchets instead of one should find their way into the box…"

Coins and Coinage: The United States Mint, A. M. Smith, 1884

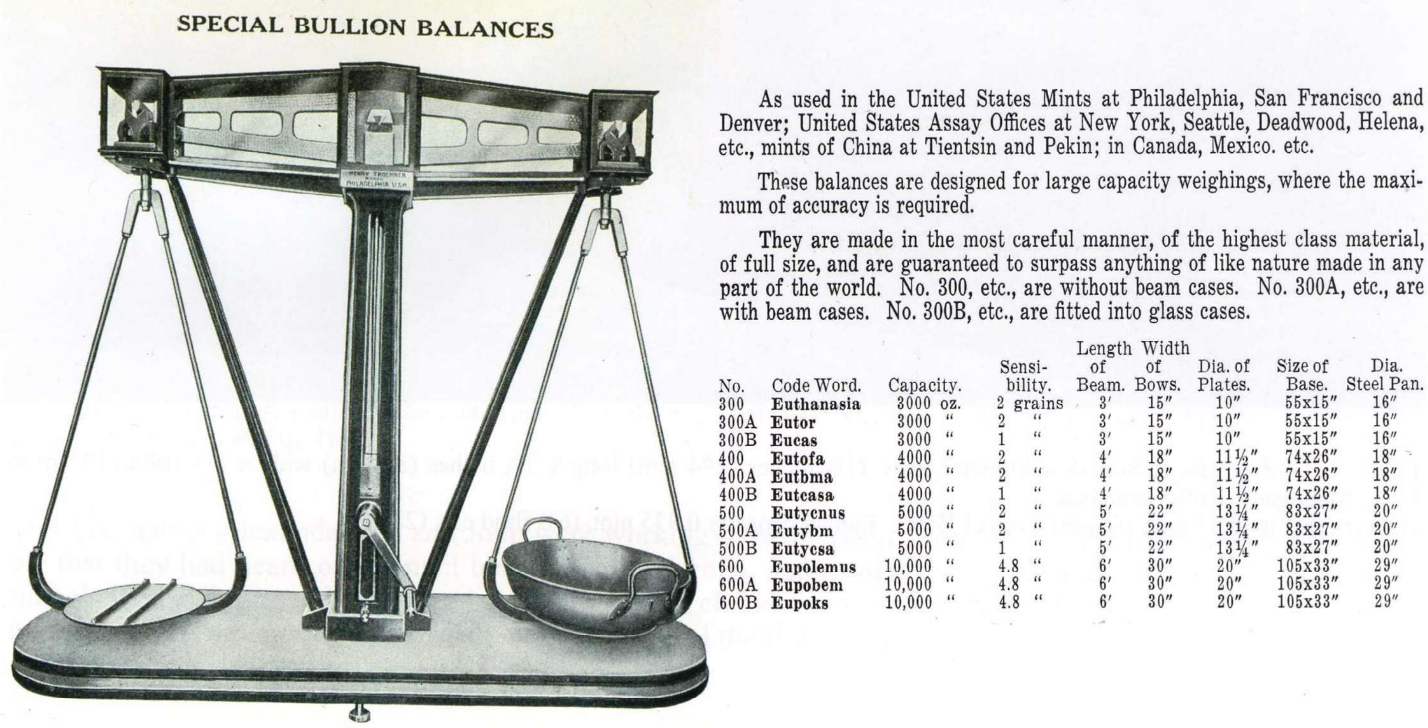
There were a few other items on display, but no further weighing equipment. Perhaps the most impressive machine is the coin press shown below.



Having said that, my interest in the machines actually producing the coins is far less than in the equipment used for weighing them. So, the various crucibles or punches and dies didn't even tempt me enough to take a picture. Anyway, by the time I had had a look at all the exhibits, the rain had stopped and in fact the place was due to close for the day. I began to marvel at the whole episode: I had primarily gone on this trip to follow the music road (Nashville, Memphis, New Orleans). But of course, we all know that scales and weights can be found in the most unexpected places and they certainly have a habit of cropping up on my travels: At an Air Force Museum in Denver some years ago, I also bumped into a Troemner bullion balance displayed in a glass case, amongst jet planes, rockets and bombs. On this occasion however, had it not rained, or had I been an hour later I would have missed an absolute gem!

Editor's Note:

Special Bullion Balances similar to the one shown in Figure 1 of this article were offered in many sizes as shown in the illustration below from Troemner's Catalog of 1929.



HENRY TROEMNER
PHILADELPHIA U.S.A.

SPECIAL BULLION BALANCES

As used in the United States Mints at Philadelphia, San Francisco and Denver; United States Assay Offices at New York, Seattle, Deadwood, Helena, etc., mints of China at Tientsin and Pekin; in Canada, Mexico. etc.

These balances are designed for large capacity weighings, where the maximum of accuracy is required.

They are made in the most careful manner, of the highest class material, of full size, and are guaranteed to surpass anything of like nature made in any part of the world. No. 300, etc., are without beam cases. No. 300A, etc., are with beam cases. No. 300B, etc., are fitted into glass cases.

No.	Code Word.	Capacity.	Sensibility.	Length of Beam.	Width of Bows.	Dia. of Plates.	Size of Base.	Dia. Steel Pan.
300	**Euthanasia**	3000 oz.	2 grains	3′	15″	10″	55x15″	16″
300A	**Eutor**	3000 "	2 "	3′	15″	10″	55x15″	16″
300B	**Eucas**	3000 "	1 "	3′	15″	10″	55x15″	16″
400	**Eutofa**	4000 "	2 "	4′	18″	11½″	74x26″	18″
400A	**Eutbma**	4000 "	2 "	4′	18″	11½″	74x26″	18″
400B	**Eutcasa**	4000 "	1 "	4′	18″	11½″	74x26″	18″
500	**Eutycnus**	5000 "	2 "	5′	22″	13¼″	83x27″	20″
500A	**Eutybm**	5000 "	2 "	5′	22″	13¼″	83x27″	20″
500B	**Eutycsa**	5000 "	1 "	5′	22″	13¼″	83x27″	20″
600	**Eupolemus**	10,000 "	4.8 "	6′	30″	20″	105x33″	29″
600A	**Eupobem**	10,000 "	4.8 "	6′	30″	20″	105x33″	29″
600B	**Eupoks**	10,000 "	4.8 "	6′	30″	20″	105x33″	29″

Alexander Adie & Son

BY DIANA CRAWFORTH-HITCHINS

When Michael Crawforth was invited to research scientific instrument makers in Britain, we knew almost nothing about that lively community of Scotsmen living in Edinburgh during the second half of the 18th century and the 19th century. Having lived near there, we understood how passionately the Scots pursued scholarship and education, and how they favoured instruments made by Scotsmen. We knew how the Scottish culture was independent of the culture south of the border, but we had so much to learn about individual makers.

Gradually we noted down instruments made by the Adie family in Edinburgh, starting with the instruments made by Miller & Adie from 1796 onwards. Theodolites, sextants, barometers, telescopes, surveyors' wheels, air pumps, etc came from their workshop to cater for the scientific investigations in Scotland, with a bias towards optical instruments. (They did call themselves Opticians.) So we were surprised when we bought a chondrometer made by Adie & Son, really a tool for farmers wanting to assess their crops of grain, or for middlemen buying crops from those farmers.

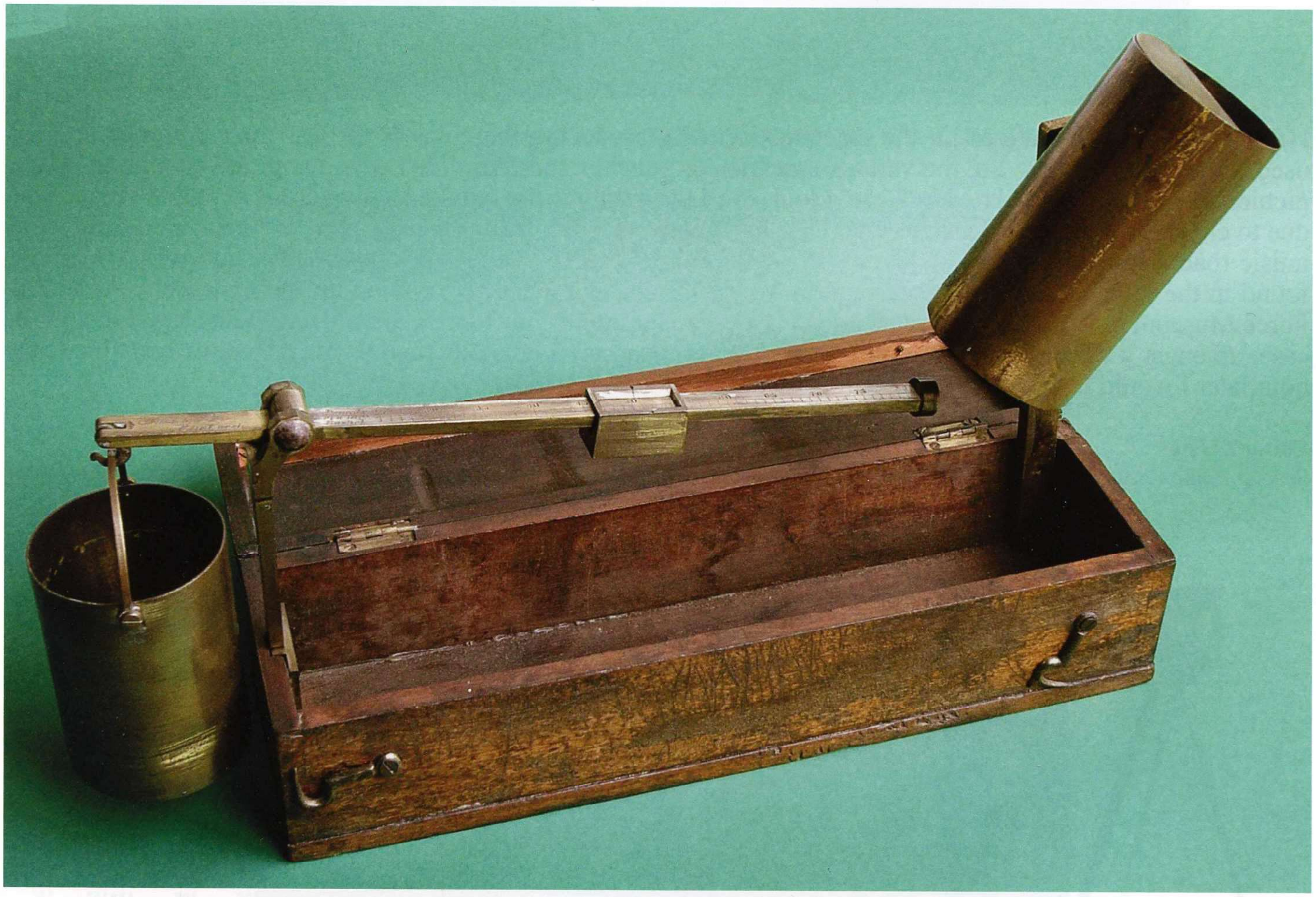


Figure 1. △△ Adie & Son chondrometer, Box 11¾ inches (294 mm) long x 3¼ inches (80 mm) wide x $2^{7}/_{8}$ inches (73 mm) high. Mahogany, badly scratched.
Bucket capacity 0.33 pint, ($6^{1}/_{3}$ fluid oz) (175 cc). Funnel capacity 0.375 pint, (6¾ fluid oz), (220 cc).

All chondrometers measured the weight of the grain in the little bucket, but the graduations told the user how heavy a bushel full of that grain would weigh. Farmers, dealers and merchants all thought about the quality of grain by its weight per bushel. The buckets on chondrometers ranged from ¼ pint to 1 pint, so the ratio ranged from 1:256 (very inaccurate) to 1:64 (better).

Although chondrometers were used in England, this Scottish one had some odd features, presumably invented by Alexander or one of his sons, John, Richard or Patrick Adie.

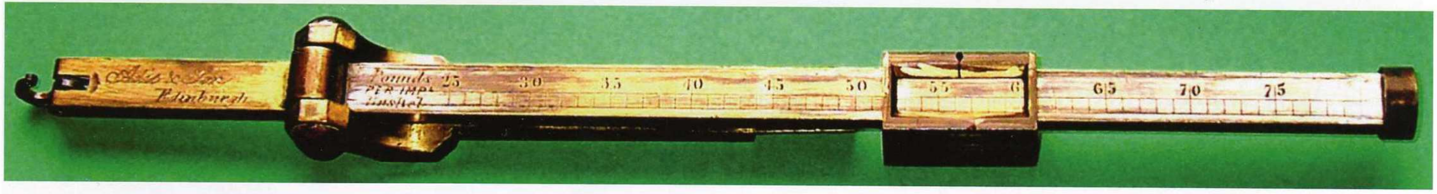
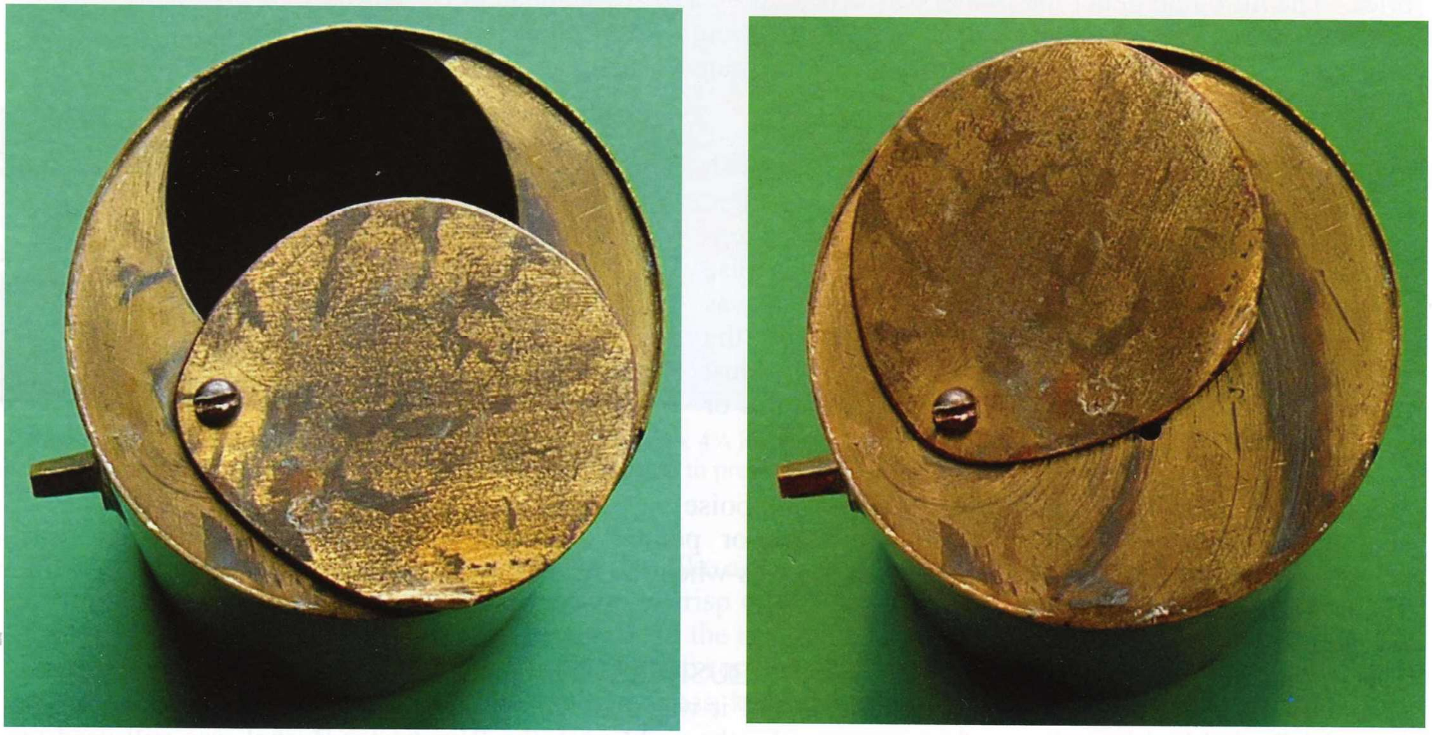


Figure 2. ▲▲ Steelyard beam silvered, with a cylindrical knob screwed on the end to prevent the poise from sliding off the beam. Graduations '25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75. Pounds PER IMP^{L} Bushel. *Adie & Son Edinburgh'*.

It had two pillars, one that slotted into the box to support the beam while weighing and one attached to the box to support a rather crude funnel while grain slid down into the bucket at a steady rate. So they were thinking about consistency of settling the grain. How early? Before anybody else in Britain? They might have picked up the worries of the Rev. G S Keith[1] about the difference between filling slowly with a small shovel and quickly with a large one and devised a funnel to solve the problem.



Figures 3a & 3b. ▲▶ The swivelling flap under the funnel has a tab to open it, and a hole in the base where, presumably, a pin prevented the flap from swivelling before intended. Note the peg located halfway down the funnel that pegged into one of three holes in the pillar. (See Fig. 4)

The Adie father Alexander and son John were working in partnership[2] from 1835 until 1881 so it is conceivable that they had heard of a funnel being used in Europe, and designed their own version. Fully functional funnels were being used in Sweden by 1753.[3] If this chondrometer was made early on in their partnership, it might be a first attempt by any British maker to control the flow of grain.

We longed for an instruction label to tell us which grain was being checked when the funnel was pegged into one of the three holes in the pillar. If the funnel was in the highest position, the grain would be moving faster than when the funnel was in the lowest position, so that would suggest that the most irregular grain (oats) would need to flow from the highest position and smooth grain (wheat) from the lowest position. But, what about the grains between those densities? If we ever find another Adie chondrometer with its label, we might answer that question.

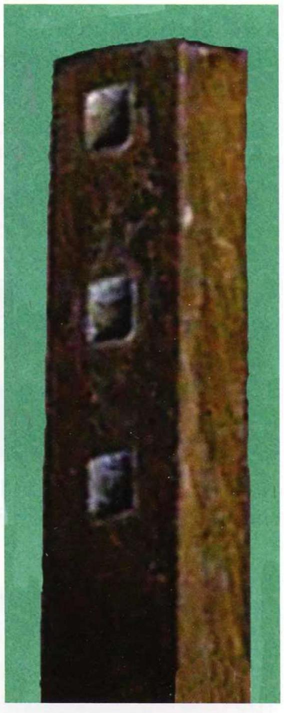


Figure 4. ▲▲ The three holes in the right-hand pillar for the peg of the funnel.

The box is very badly scratched, showing that the chondrometer was carried around for a long time, and the bucket and funnel are dented, also showing rough handling. Why did Adie not fit small blocks of wood inside the box to prevent movement during its travels? Such a small improvement, but a sign that Adies were not thinking about the way the customer would use it.

When we did an experiment with the chondrometer, the funnel fell off its pillar because the peg was too short to hold the funnel securely while the flap was being moved sideways. If the peg were longer, going right through the pillar, it should have stayed on, not scattering wheat all over the place.

The bucket and the funnel were made of sheet brass, unlike the heavier cast-brass buckets made in England. Although the manufacture was simple, the thinking behind the idea was precise, so possibly this instrument was a first model, to test out their theories. The little flap under the funnel was kept shut by a peg which had to be removed to allow the flap to be moved sideways until it hit the rim of the funnel-base. This primitive means of opening the flap meant that the grain started to come out before the hole behind the flap was fully open.

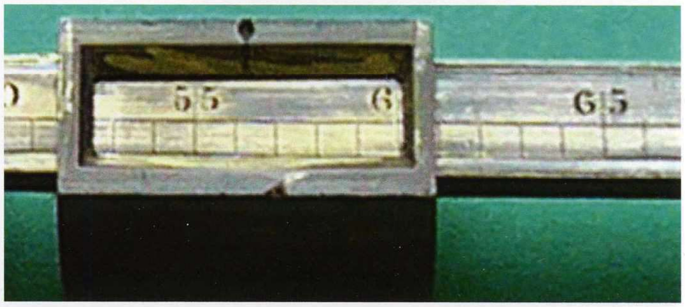


Figure 5. ▲▲ Poise $1^{1}/_{8}$ inches long (28 mm). Flexure spring inside the poise, under the beam, missing.

It had one more unusual feature - the poise. English chondrometer poises were read off at the fiducial edge, where the light clearly showed the graduations engraved into the brass beam. The Adies had a poise with raised edges, and the graduation to be read was centrally placed in the hole in the top of the poise. This is fine with our well-lit rooms, but must have been a serious problem in the days of candles or even oil lamps.

We found it difficult to decide exactly where the poise should be positioned because there is no arc or pointer to tell us exactly when equilibrium was achieved. We decided that the correct position was when the beam hovered exactly parallel to the box lid, visible behind the beam.

The words "PER IMP^{L}" were added to "POUNDS BUSHEL". It seems unlikely that the chondrometer was originally made to weigh in Winchester Bushels, if it was made after John joined his father in 1835. The Imperial Bushel had been in use for nine years by then, although the Winchester Bushel was still used in parts of Scotland, so they did need to specify which Bushel they were measuring for.

After Michael died, I continued to collect and study scales. One day Andrew, our son, came in with a chunky block of mahogany with a steelyard attached to the top edge. Plonking it down behind me in the kitchen, he asked me "*Who made this postal scale?*" I turned my head and said "*Adie*". He was impressed by the speed of my reaction, but it wasn't so difficult. It had an Adie poise. It was chunkier than the one on my chondrometer, but had the distinctive hole in the top.

Andrew had bought it from a dealer who had bought it from the family of a deceased Post Mistress in a village in Scotland. She had been given the scale on her retirement. Having a capacity of 1 lb, it would have covered the requirements for almost all packages as well as letters. In fact, it would be better for packages than for letters, as the size of the divisions for the ½ oz and 1 oz is very small, and would have made it difficult to decide whether a letter fell within the bottom rate or the next rate up.

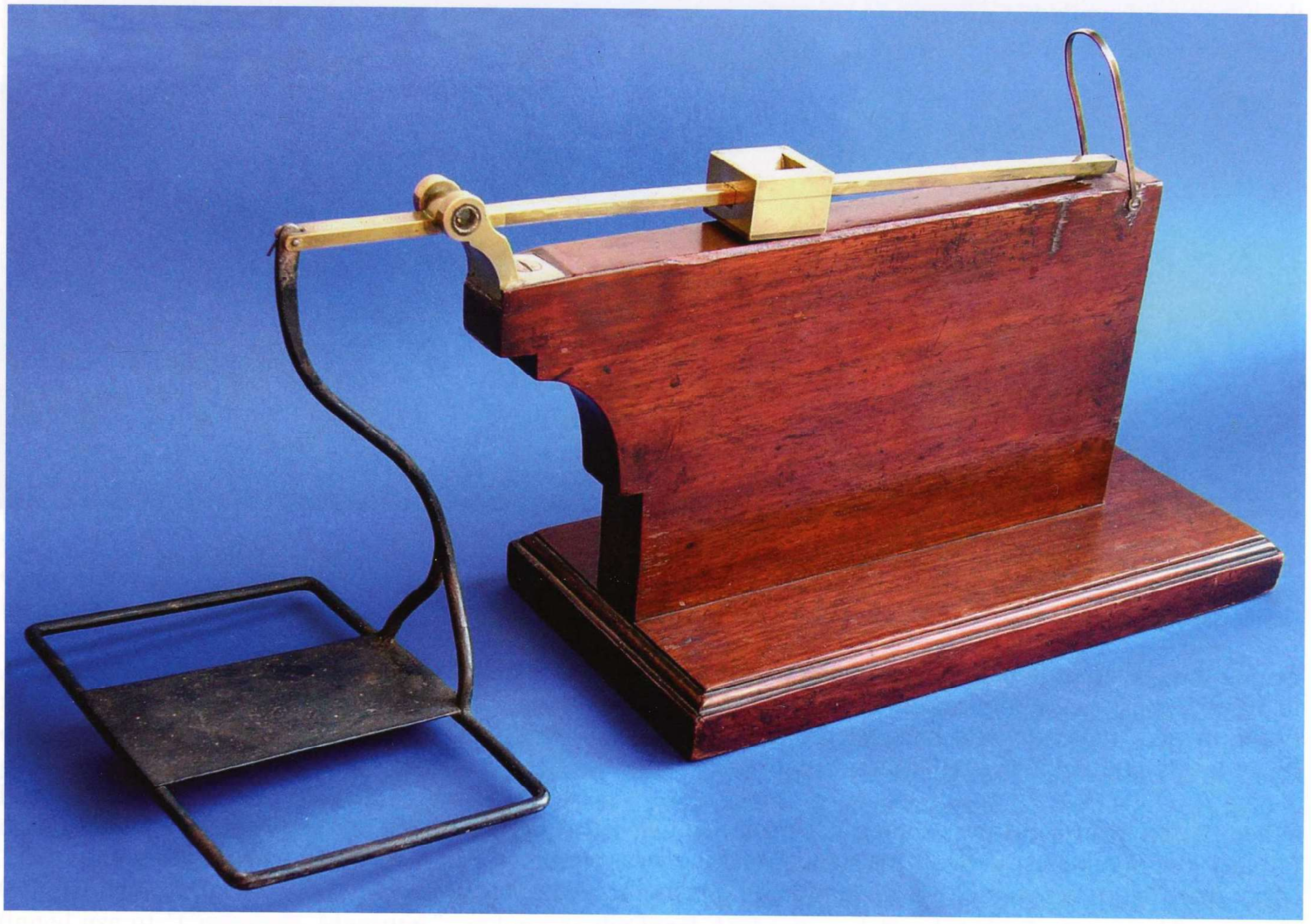


Figure 6. ▲▲ Post Office Scale, Base 10 inches (255 mm) x 4¾ inches (123 mm). Maximum height 8 inches (205 mm). Beam 12 inches (30 mm) long. Small screw at the end of the beam to prevent the poise from coming off the beam.

As a postal scale, it does the job effectively, just like a shelf-edge coin scale, but with the "shelf" provided by the block of mahogany. The workmanship is crisp on the brass, but the iron hanger lets it down artistically. Were Adies reducing the cost of the scale to the minimum to suit their Scottish customers who had to be careful with their money? Or did the Post Office squeeze the profit-margin when making a contract with the Adies? Or did Adies have trouble obtaining brass, keeping it for their more prestigious instruments?

The beam was broken when Andrew bought it, so he was able to examine the construction properly. The short arm was solid brass, but just beyond the fulcrum, the beam was made of folded brass sheet, soldered half way across the top surface. Not only was it in effect a square brass tube, but it was made of two short tubes, joined at zero and at 7 [oz] and at 1 POUND, with a small cube of brass inside at the 7 oz point, and a block at the end into which the stop screw was screwed. This suggests an extraordinary need to economise on the use of brass, just as the sheet funnel and bucket on the chondrometer also suggest economy.

As with the chondrometer, when we experimented, we had to decide when the poise was correctly positioned. We agreed that the beam should hover parallel to the block of mahogany. And we found another rule to follow. Make sure the base is truly level. We started when the base was slightly tipped, so that the beam was also slightly tipped when we got it parallel to the base. We had measured the packet as 8¼ oz, but when we levelled the base we found that the packet weighed 8¾ oz. So why didn't Adie put a spirit level on the base, as he would have done on a scientific instrument? Or even a plumb line on the vertical slab of mahogany? Economy again?

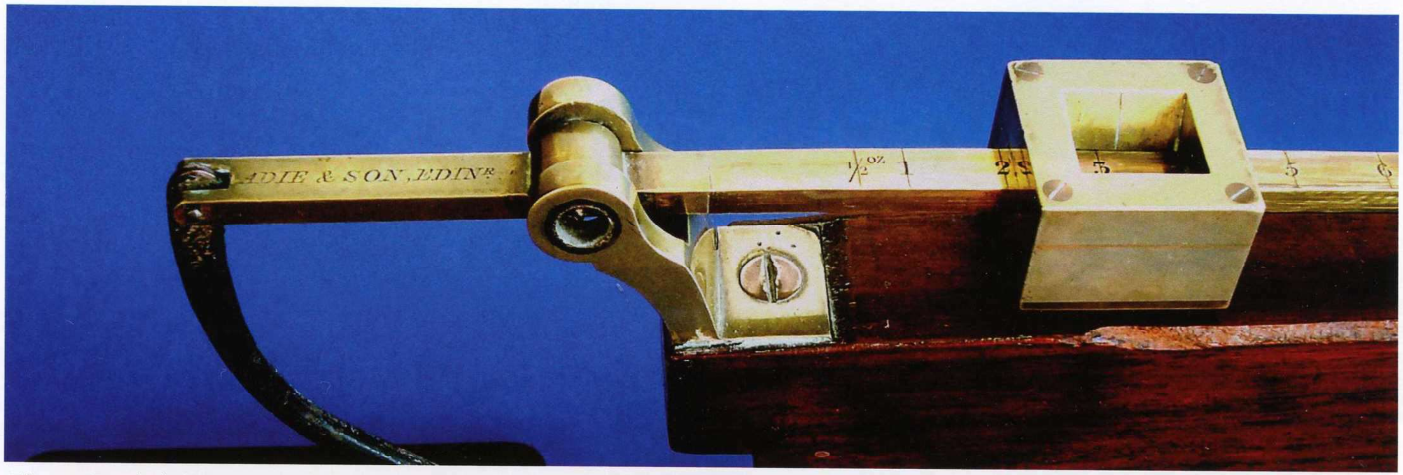


Figure 7. ▲▲ The poise comprises three sheets of brass, the top one trapping the beam onto the second block which has a channel cut in it to hold the beam, and a very thin sheet on the bottom to adjust the mass of the poise. The hole in the poise is so deep that it is very difficult to read the number. It is easier to read the numbers outside the poise and work out what the number inside the hole is!

Dating the postal scale is impossible, but we assume that it was made after the Penny Postal system started in 1839, as postage in Scotland before 1839 had been prohibitively expensive, due to the great distances between towns. Letters would have been a luxury for those literate and articulate Scots (compared with the lower levels of literacy in England).

When Alison Morrison-Low's superb book[4] on Scottish scientific instrument makers, "*Brass & Glass*" came out in 1989, my interest in Scots instrument-making was reinforced, but it was only when I was going round Mary Anne Murphy's stunning collection that I got another Adie surprise.

Mary Anne has a chondrometer signed by Alexander Adie, who worked alone from the death of his uncle and mentor, John Miller in 1815, until he was joined by his son John in 1835. That made it early and interesting, but it was the units of measurement that made me seriously excited. It is graduated in Winchester bushels and in firlots.

My chondrometer reads in the larger Imperial bushel of 2219.36 cubic inches (so had to relate to the Act of Parliament of 1826, when Parliament insisted that all grain be measured and sold using the newly defined Imperial measures). Mary Ann's could predate that Act, when the smaller Winchester bushel of 2150.42 cubic inches was the official unit of measurement in England and in parts of Scotland.

Imperial measures and Winchester measures were widely used over the north of England (north of the River Dee) even after 1834, so Controllers [of the sales of grain] converted by either adding $^1/_{30}$ to make the smaller Winchester bushel mathematically bigger, or subtracting $^1/_{31}$ to make the larger Imperial bushel mathematically smaller, to make them comparable for pricing purposes.

That was interesting, but it was that word "Firlot" that really got me excited. The firlot was an exclusively northern measure, and particularly a Scottish measure, comparable with a bushel but with a capacity of 2197.36 cubic inches when stricken. It was used for measuring wheat, pease, beans and rye. When oats, barley or malt was being weighed, the firlot was heaped and had a capacity of 3205.52 cubic inches.

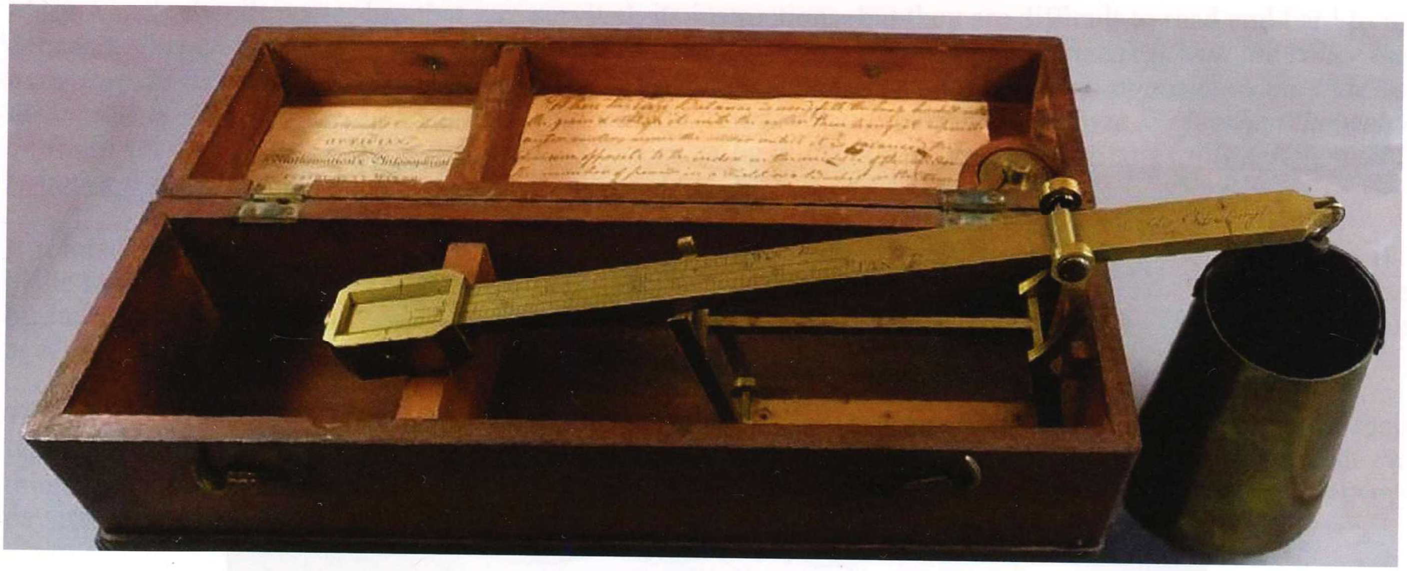


Figure 8. Alexander used a folding mechanism that exactly copied that used for folding gold balances, designed by Anthony Wilkinson in Lancashire in about 1772. Why did he reject that efficient system when he was working with his son?

Of course, heaping was a disputable method of measuring, as a cunning user could heap his firlot a little higher if he was buying, or lower if he was selling. Even striking was a flexible measure, as the cunning user could compress the grain by tipping the strike while dragging it across the top of the bucket, or stroke the grain gently so that it was not compacted, if it suited him. Even the speed at which a measure was filled could affect the results by 6%, so the profits on the sale of grain were greatly affected by the cunning of the measurer.

As with all measures, they gradually increased in capacity over the centuries, as people in power wanted more for their money. The Scots suffered particularly when the size of the firlot increased because so many of them paid their rent in firlots of grain, not in money. Their official firlot from the 1770s was the Linlithgow firlot[5], which was the one used by Alexander Adie as the "LIN^{W} firlot". That sounds straightforward, but in practice, Adie's chondrometer would not have been useful throughout Scotland because local firlots did not always conform to the Linlithgow standard.

Officially the firlot was made redundant with the Act of 1826, but the Act left a loop-hole, allowing the continued use of "Customary Measures", as long as the local Authorities defined their Customary Measure in terms of the Imperial Measure. So firlots continued to be used legally until around 1850ish. That is comparable with the time taken for the metric system to be accepted by the populace in France, or the metric money system in UK.[6]

I find myself getting ridiculously poetic when studying Scots terminology. For striken measure, 4 lippies or forpets equalled 1 peck. 4 pecks equalled 1 firlot. 4 firlots equalled 1 boll, and 16 bolls equalled 1 chalder. So much more fun than metric measures!

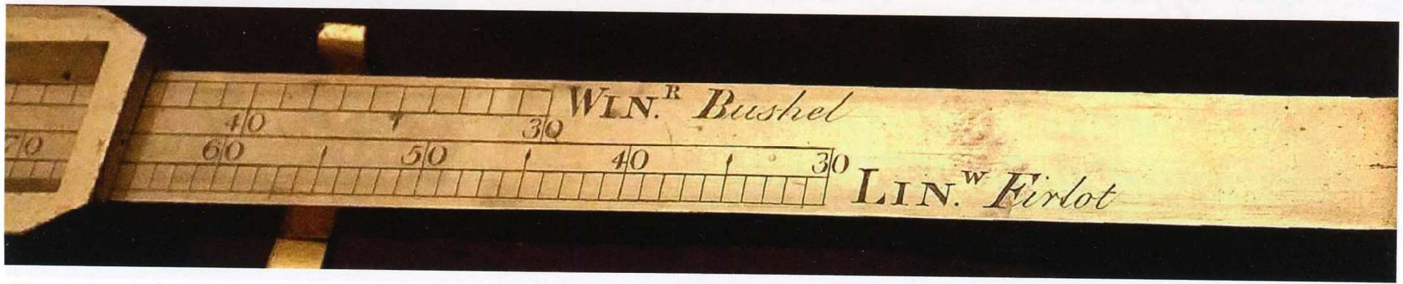
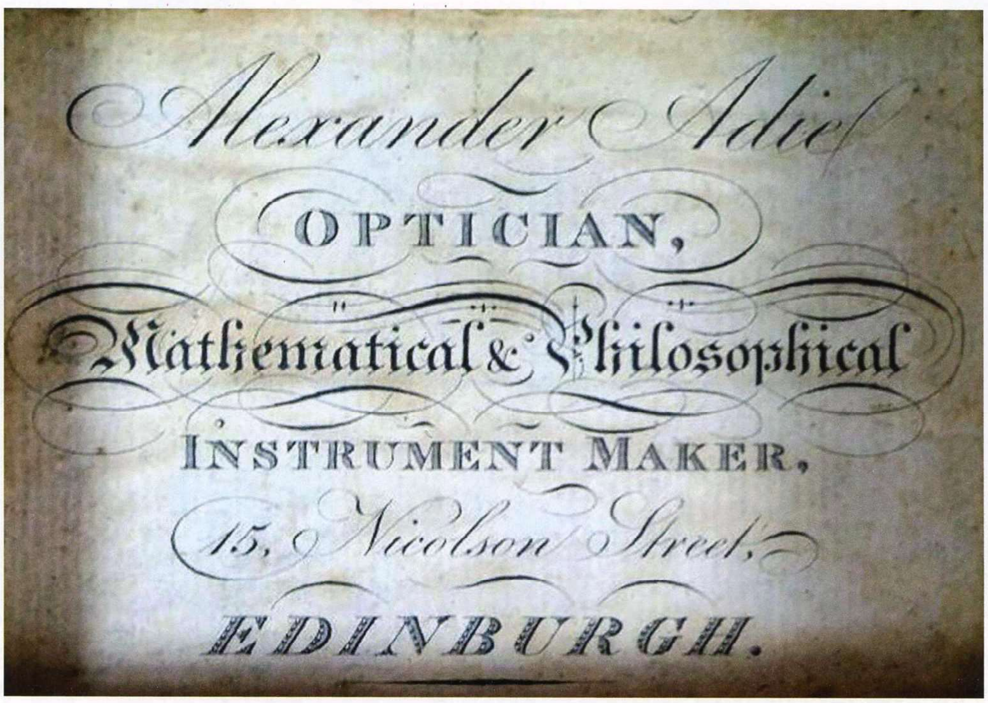


Figure 9. The two sets of graduations are to go with the two poise masses, the poise used on its own, and the poise used with the additional screw-attachment.



Alexander Adie

OPTICIAN,

Mathematical & Philosophical

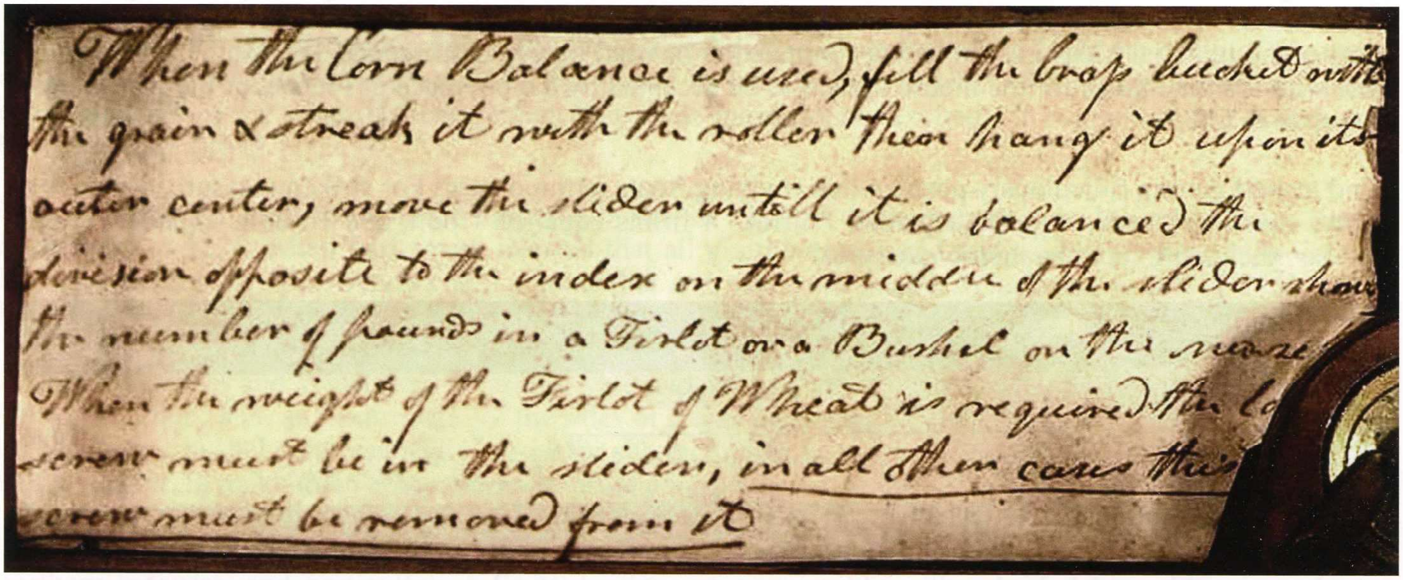
INSTRUMENT MAKER,

15, Nicolson Street,

EDINBURGH.

Figure 10. ⩓⩓ This trade card was produced by Alexander after he chose to stop calling his firm Miller & Adie in 1822, and before he moved to Princes Street in 1829. A philosophical instrument maker made instruments for lecturers wanting to demonstrate the physical properties that rule our world.

The trade label in Mary Anne's chondrometer bears the address "15, Nicolson Street". Alexander Adie was working there with his uncle John Miller from 1811 until the death of his uncle in 1815, and stayed on there until 1829[7], when he moved to the smart area of Princes Street[8] in the New Town part of Edinburgh. Because Alexander kept the name of the firm as Miller & Adie until 1822, the label in Mary Anne's box must have been printed after 1822, giving the first possible date for her chondrometer.



When the Corn Balance is used, fill the brass bucket with
the grain & streak it with the roller then hang it upon its
outer center, move the slider untill it is balanced the
division opposite to the index on the middle of the slider show
the number of pounds in a Firlot or a Bushel on the scale
When the weight of the Firlot of Wheat is required the lo
screw must be in the slider, in all other cases this
screw must be removed from it

Figure 11. ⩓⩓ Calling it a corn balance is sensible for non-Greek-speaking customers, but fails to imply its use for so many other grains and seeds.

Mary Anne's chondrometer has that rare survival, its instructions, but they are difficult to read and hard to understand. *"When the Corn Balance is used, fill the brass bucket with the grain & streak it with the roller then hang it upon its outer [?] center; move the slider untill it is balanced. The division opposite to the index on the middle of the slider have the number of pounds in a Firlot or a Bushel on the nowze [??] When the weight of the Firlot of Wheat is required, the loose screw must be in the slider. In all other cases this screw must be removed from it."*

It refers to the roller, which is missing. The roller has the effect of compressing the grain, whereas a flat-bladed striker cuts the grain off sharply (if properly used). The two variants were each used on full-sized bushels in specific parts of England, so the bucket of the chondrometer was struck or rolled to match local usage. So was the Scottish habit rolling, not striking?

The "slider" is the poise and I assume that the "outer center" is the knife edge at the end of the beam. Quite what the "*number of pounds in a Firlot or a Bushel on the nowze [??]*" means, I cannot say, unless Adie was thinking that the firlot and the bushel were so similar that the same measurement was good enough for everyday trading.

Adie was defining a firlot in pounds, not in lippies, or pints, so he was assuming that the full-sized bushel of grain was going to be weighed in standard English pounds, or discussed by seller and buyer in pounds according to their requirements (grain for people to eat, grain to sow as seeds, or grain to feed to animals).

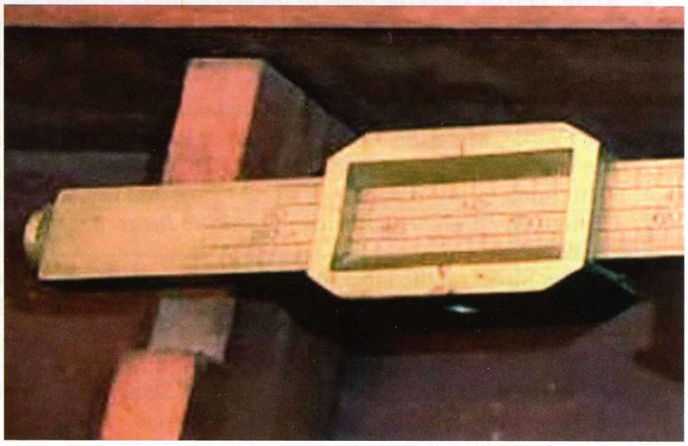


Figure 12. ➢➢ The poise on each instrument is different in proportions and different in the method of manufacture, but all three have that distinctive rectangular hole in the top. This one has a threaded hole in the side, into which the loose round poise could be screwed.

The use of the loose screw to increase the mass of the poise is most interesting. It was only applied when weighing wheat, the densest of the grains, and it was only for people thinking in Linlithgow firlots. Why was wheat dealt with separately? Why was a loose screw not used by other chondrometer designers?

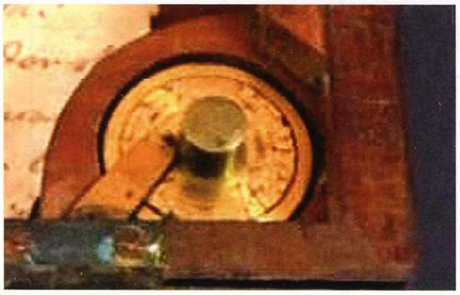


Figure 13. ≺≺ The loose poise that was used to increase the mass of the sliding poise when it was screwed onto the side of the poise.

Having studied my two Adie instruments, and Mary Anne's, I thought I'd better check out any other Adie weighing instruments that have survived. The National Museum of Scotland[9] has a chondrometer signed Adie that has similarities with mine, except that it has never had a funnel, and is in a much smarter box with neat, small blocks to prevent damage to the chondrometer when it was carried around. It has a robust bucket, and still has its roller. It measures Imperial Bushels, so was made after 1826, but as there is no mention of his son, it was probably made before 1835.

Alexander Adie was one of the experts who defined the Standard Measures of length for Edinburgh County[10] in 1826. He was no mere optician. He was a passionate scientist, doing much original research, meeting and co-operating with the top scientists of his day, and publishing his results in the most prestigious journals. He helped to compile the *Edinburgh Encyclopaedia*[11] with David Brewster, who frequently advertised Adie's skills and brought him customers.

Studying our three instruments leads us to question the thoroughness of the inventors. Why did they not think more about their customers' usage? Some simple changes would have made the instruments much easier to use.

In 1844 Sir George S. MacKenzie showed the participants at the Highland & Agricultural Society a chondrometer made by Mr. Adie, optician of Edinburgh.[12] This raises a question as to its novelty for people in the Highlands. Were they not familiar with chondrometers? Were they seeing a funnel for the first time? How did they assess grain if they didn't use chondrometers? The old way, by eye and hand? Did they yearn for a chondrometer to give greater precision to their negotiations?

Acknowledgements:
With thanks to Andrew Crawforth, Mary Anne Murphy, Ulrich Biber & Claus Borgelt. Particular thanks to Kurt Beyreis for taking photographs of Mary Anne's chondrometer.

Endnotes:

1. Keith, G S, *A General View of the Agriculture of Aberdeenshire [for the] Board of Agriculture*, pub Aberdeen, 1811.
2. John Adie died in 1857, and his father Alexander died in 1858, but the name "Adie & Son" was retained until 1881. After their deaths, Thomas Wedderburn was responsible for the Edinburgh branch.
3. Ulrich Biber kindly told me to go to http://www.kruenitz1.uni-trier.de/, click on Oeconomische Encyclopädie online, and check korn-wage. Very comprehensive text in German.
4. See Clarke, Morrison-Low & Simpson, *Brass & Glass*, pub National museums of Scotland, 1989.
5. See Connor & Simpson, *Weights & Measures in Scotland*, pub National Museums of Scotland, 2004.
6. I still think of my weight as 9 stone 12 oz, and my height as 5 foot 9½ inches!
7. Clifton, G, *Directory of British Scientific Instrument Makers 1550-1851.* Pub Zwemmer & National Maritime Museum, London, 1995.
8. Princes Street on the label, but Prince Street in Trade Directories.
9. Information supplied by Dr. A. Morrison-Low & Julie Orford of the Science Department of the National Museum in Edinburgh.
10. Bryden, D J, *Scottish Scientific Instrument Makers 1600-1900*, Edinburgh 1972. Writes about Adie, Jardine & Murray, *Report... regarding the Weights & Measures of Scotland*, Edinburgh 1826.
11. Brewster, D, *Edinburgh Encyclopaedia*, pub. 1830.
12. *The Agricultural Gazette*, 13 Jan. 1844.

Notes:
See Simpson, A D C, Document 837, *Interpreting Scots measurement terms; a cautionary tale*, pub Edinburgh University Press.
See Stock, J T & Bryden, D, *Technology and Culture, 13*, (1972) A Robinson Balance by Adie & Son of Edinburgh.

Makers/Retailers of Chondrometers

Surname	Fore-names	Street	Town	Dates	Maker	Pre-Imperial	Type if not steelyard	Funnel
Abraham	Abraham	Lord St	Liverpool	1818-37		Yes		
Adie	Alex	15 Nicolson St	Edinburgh	1822-1829	Yes	Yes		
Adie	Alex		Edinburgh	1815-35	Yes			
Adie & Son	Alex & John		Edinburgh	1835-1880	Yes			Yes
Apps	Alfred	433 Strand	London	1880-1882				
Avery	W & T		Birmingham	1816-90				
Bailey			Bristol	?		Yes		
Bate	which??		London					
Bather	Geo	Haymarket	London	1821-48				

Surname	Fore-names	Street	Town	Dates	Maker	Pre-Imperial	Type if not steelyard	Funnel
Bedington	James		Birmingham	1845-76				
Bleuler	John	27 Ludgate Circus	London	1757-1829		No		
Boemer			USA	1953				
Bolger & Co			London	?			Pendulum	Yes,for oats
Braham	John	10 St Augustine's Parade	Bristol	1830-56				
Buckley	Joseph	14 Lower Sackville St	Dublin	1859	Retailer			
Buss	T O	33 Hatton Garden	London	1863-1900 on		No		
Cary			London	1789-1825		Yes		
Casella	L	Hatton Garden	London	1865-70				Yes
Chambers			UK?	1921				
Cock	S	Excise Store Office	London	1837-1840	Supplier			
Coombe	Benjamin	52 Mark Lane	London	1832				
Coombe	Benjamin	31 Mark Lane	London	1834				
Coombe	Benjamin	32 Mark Lane	London	1836				
Coombe & Co	Benjamin	30 Mark Lane	London	1850-2		Yes		
Cooper	T			?				
Cooper	W&T		Lynn	1826				
Corcoran		Mark Lane	London	1802 on				
Corcoran II	Bryan	31 Mark Lane	London	1872-91				
Corcoran & Co	Bryan	38 Mark Lane	London	1836-70				
Corcoran & Grigg	Bryan I & John	31 Mark Lane	London	1812-18		Yes		
Corcoran & Son	Bryan	36 Mark Lane	London	1820-31				
Corcoran Ltd	Bryan	31 Mark Lane	London					Yes
Corcoran, Witt & Co		30 Mark Lane	London	1871-80				
Cox	Frederick	100 Newgate St	London	1845-1901				
DeGrave & Son		St Martin le Grand	London					
DeGrave, Short & Fanner		59 St Martin's le Grand	London	1845-71				
DeGrave Short & Co Ltd			London					
Dell & Son	W R	26 Mark Lane	London	1880				
Dell*								
Dixey	C W		London	1838-60		No		
Dollond			London	1804-52				
Dring & Fage		19-20 Tooley St	London	1845-82		No		
Dring & Fage		20 Tooley St	London	1804-1844				
Ebsworth	Geo	54 Fleet St	London	1828-35		No		
Egerton Smith & Co		Pool Lane	Liverpool	1812				
Elliott Bros		5 Charing Cross & 56 Strand	London			No		

Surname	Fore-names	Street	Town	Dates	Maker	Pre-Imperial	Type if not steelyard	Funnel
Fairbanks Morse			USA					US steelyd
Franklin	A L		Sydney, Australia	1923-1960				Classic German 20th C style
Fraser I	William	3 New Bond St	London	c.1780-991805		Yes		
Fraser & Sons	W	3 New Bond St	London	1805-1812		Yes		
Graintec Scientific		10/493 South St, Southgate Business Park,	Toowoomba, QLD 4350, Australia	2017				
Gardner	Henry		Belfast	1825	Retailer			
Griffiths	A		London	dated 1776		Yes		
Harris & Son	W	50 Holborn	London	1840-55				
Hedicke								
Hedicke	M	3 Adelaide Place	London	patent 1884			Pendulum	
Hicks I	Joseph	8 Hatton Gardens	London	1817-c.27		No		
Hudson		26 Charing Cross	London	1840-60				
Hughes & Son		Park Lane	London	?				
Jansen & Heuning			Germany	21st C	Retailer			
Kern			Germany	2017				German style
Langley	W	46 Tooley St	London	c.1875				
Loftus	Wm Robert	321 Oxford St	London	catalogue c.1885-90				
Loftus	W R	146 Oxford St	London	1869-81				
Long	Joseph	20 Tower St	London	1830-80		No		
Marratt	John Symonds (J S)	King William St	London	1845-1875		No		
Marratt & Short		63 King William St, London Bridge	London	c.1859-65		No		
Marriott		89 Fleet St	London	1812-48		No		
MacKenzie (sp??) & Swygart		15 Cheapside	London	1816		Yes		
McGuirk			UK	1904				
McKenzie	Alexander	15 Cheapside	London	c.1840-60?		No		
Messmer Ltd	E		London		Agent for Schopper			
Metos		D-213 Vivek Vihar-1,	Delhi, India	2017				
Munro, MIM	James II	72, Oakley St, Lambeth	London	c.1823-1839				classical style
Negretti & Zambra			London E C	catalogue c.1880				
Nicholl	W L	16 Aldersgate St	London	1808-50		No		
Nicholl & Bartlett		7 Redcross St	Liverpool	1829				
Packer	W				Maker	Yes		EQM 3013
Payne			London			Yes		
Payne	Benjamin		London	1802-34				

Surname	Fore-names	Street	Town	Dates	Maker	Pre-Imperial	Type if not steelyard	Funnel
Payne & Ovenden			London	1813				
Plimpton	G	Lincoln's Inn	London	?		No		
Potter	Edward		Australia	c.1880-1900				
Precision Analysis Ltd		35-39 York Rd	Belfast, BT15 3GW	21st c.				German 19th c. style
Rubergall	Thos.	Coventry St	London					
Rubergall		Princes St, Soho	London	1854				
Rubidge			London	1782-1820		Yes		
Salter & Co	G		Birmingham		Maker		Spring	
Schmalcalder	Ch Aug		London	1806-12		Yes		
Schopper	L		Leipzig, gent in London	c.1890	Maker		Pendulum	Also standard style
Simon	Henry		England					20th c.style
Smith	Wm	High St, Borough	London	1802-46		No		
Snart		122 Tooley St, Southwark	London	1799-1832	Maker	Yes		
Snart I	John		London	1693-1738	Maker	Yes		
Snart II	John	215 Tooley St	London	1799-1832		Yes		
Sommer & Runge			UK?	1906				
Spear	R	27 College-green	Dublin		Maker			
Spencer	John	39 Union St	Glasgow	1868				2/-
Terry	Alfred	Carlton Brewery,	London [?]	1873	Exhibitor			
Vandome & Hart Ltd			London	1930-				classic Vic style
Vandome, Titford & Co	Richard		London	1841-63		No		
Vandome, Titfords & Pawson								
Watkins & Hill			London	1826-56		No		
West	[Francis I]	92 & 93 Fleet St	London	1849-52				
Winlaw		Margaret St, Cavendish Square	London		Maker	Yes	Pendulum	
Wood	Richard	7 West Smith-field	London	c.1826				
Yeates & Son	Geo		Dublin	1840-64		No		
Young		3 Bear St	London			No		
Young & Son	J	Bear St	London	1811-1901		No		

Notes:

NB The suppliers in Mark Lane, London changed addresses so frequently that I have omitted many of the moves.

Additional information greatly welcomed. Please contact Diana by email at lehitchins@gmail.com.

A Special Find in Sweden

BY ANDRÉ SOL & ROLAND OBST

I received an email from co-collector Roland Obst from Sweden with two pictures, see Figure 1 and Figure 2, and the question whether I had seen this letter scale before.

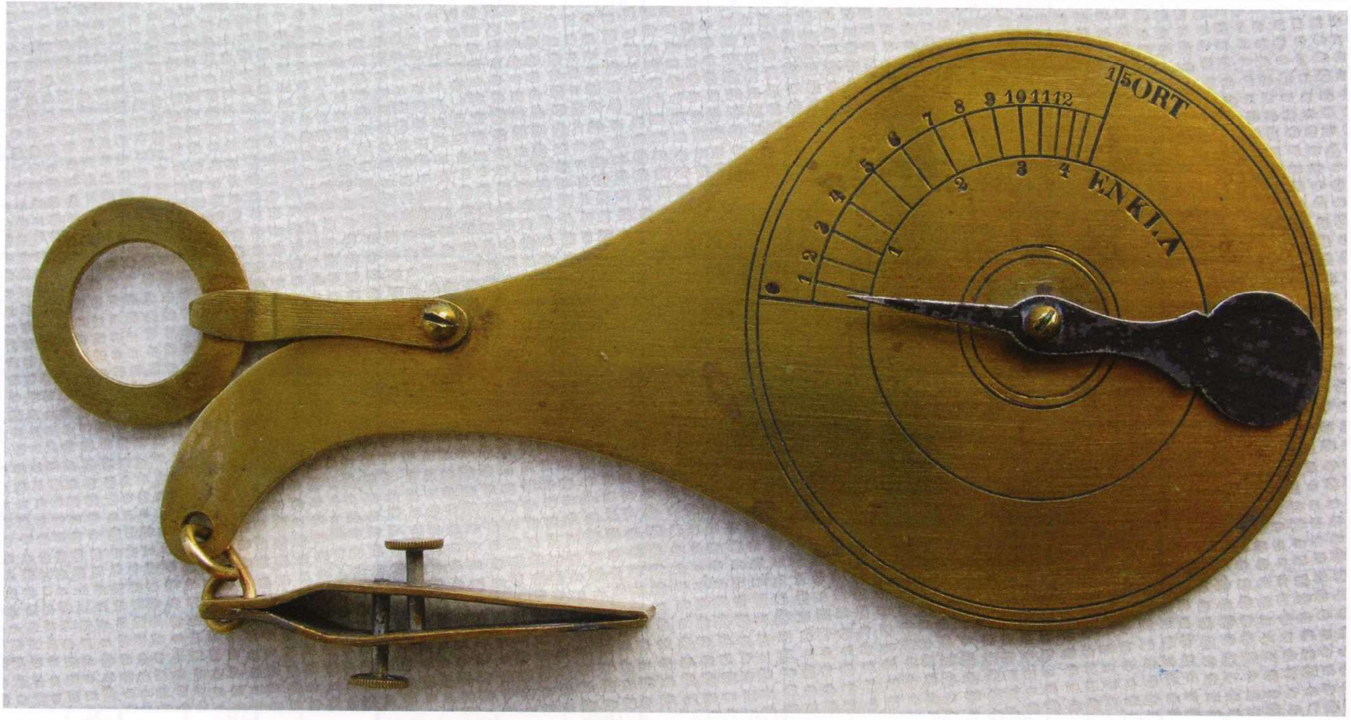
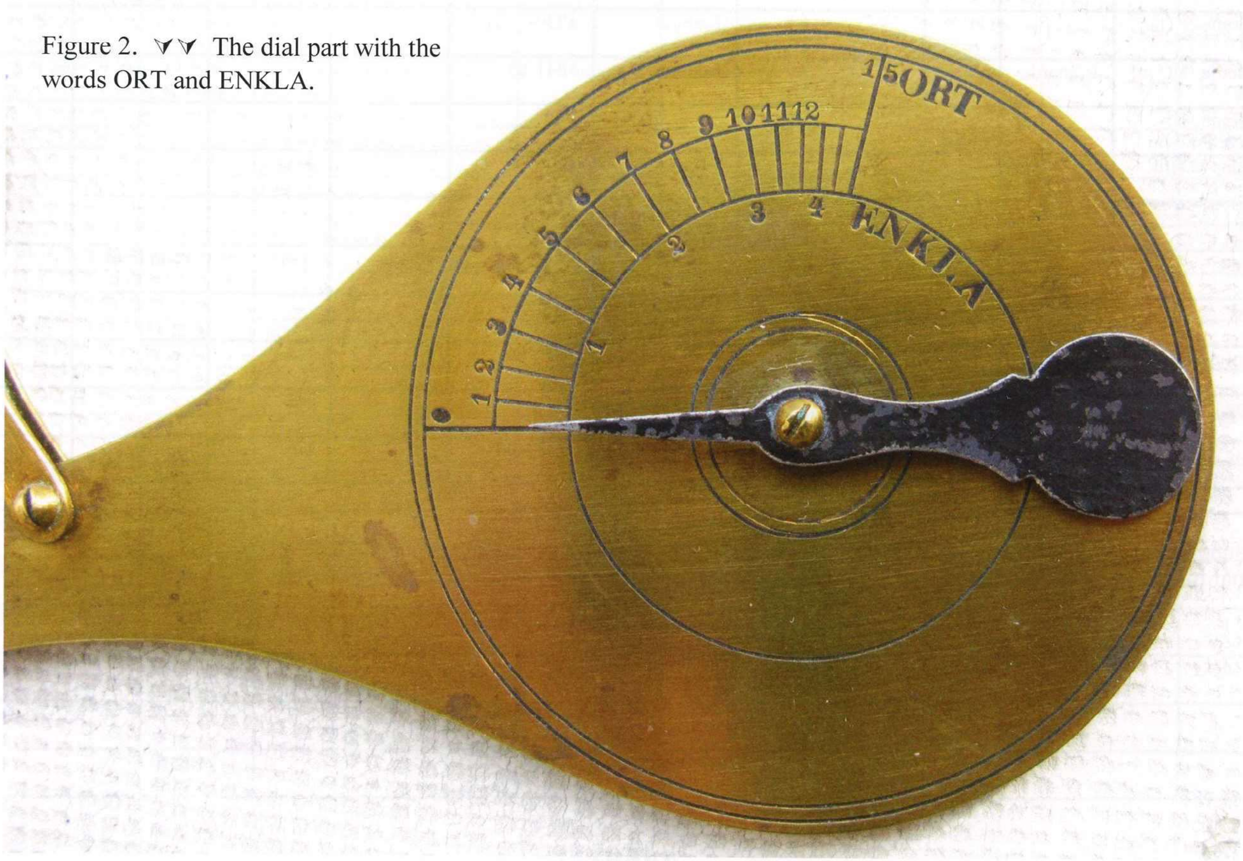


Figure 1. ▲▲ The Swedish letter scale from the period 1863 - 1872.

Figure 2. ▼▼ The dial part with the words ORT and ENKLA.



Certainly the form is known to me of mainly English letter scales with names like Hall's patent and also Cooke & Sons London, Heeley & Sons Birmingham, Perry & Co. London, Parnell London, and John Heath Birmingham. Nathaniel Richard Hall received a British patent with the number 791 on this design on March 26, 1863. This type of scale is referred to as goose neck. Michael Crawforth wrote an article about this model in Equilibrium.[1]

Also in the U.S.A., just after the Second World War, this model was launched on the market with the brand name Let-R-Way. Another version is known from Willis (US patent no. 822.804 of June 5, 1906). The company W& K Mfg. Co. made 'The Family Letter Scale'; this is also a goose neck. In France the silver letter scale by Christofle is known dating from 1972. Also related are the much older French letter scales of G. Hund and of Pradel. In the Netherlands 1989 a silver goose neck letter scale was made by Royal Begeer. In Germany, the brewery Jacob Stauder came with a replica of Hall's patent letter scale as a promotional gift. The Bremer Silberwaren Fabrik in Germany has made a Post horn model with the name 'Postillon' as a form variant of the goose neck letter scale.

Goose neck letter scales can be found weighing in ounces, in grams and in Loth. On some scales the inland postal letter rate is also given. On some versions only the English postal rate for sending letters is given in Pennies, the corresponding weight has been omitted. For more information and photos of the goose neck letter scale, see notes [2], [3], [4], [5], [6], [7] and [11].

However, the text on this brass Swedish hand scale is completely unknown to me. On the scale one reads ENKLA and ORT. I wrote back that it was a special specimen and asked if ORT was an old Swedish unit of weight, I found 1 Ort = 4.25 grams = 100 Grains. And, was ENKLA the Swedish word for single and would it be 1, 2, 3 or 4 stamps depending on the weight? Please contact the Swedish Post Museum, maybe they have more information.

Roland confirmed that ORT was indeed an old Swedish unit of weight that was introduced as early as 1820.

Because I remained curious, I tried to find out more. I found some sources about Swedish postal history on the internet and I bought online the book *Vad kostade brevet*? written by Sven Carlin.[8] This book tells enough about ORT and ENKLA. I don't know Swedish, but with some cumbersome typing and by using Google Translate you come a long way. Based on the information given on pages 112 and 113 and the table on page 26, it can be established that this letter scale dates from the relatively short period from 1863 to 1872. On January 1, 1873, the Swedish postal weight limits changed and this letter scale became unsuitable for use as an indicator of the correct number of stamps.

In Sweden, from the beginning of 1863 the following rate was valid:
0 – 4 Ort = one stamp (12 öre)
4 – 7 Ort = two stamps (24 öre)
7 – 10 Ort = three stamps (36 öre)
10 – 13 Ort = four stamps (48 öre)
After January 1, 1873 the weight limits changed:
0 - 4 Ort = one stamp (12 öre)
4 - 25 Ort = two stamps (24 öre)
25 - 50 Ort = three stamps (36 öre)

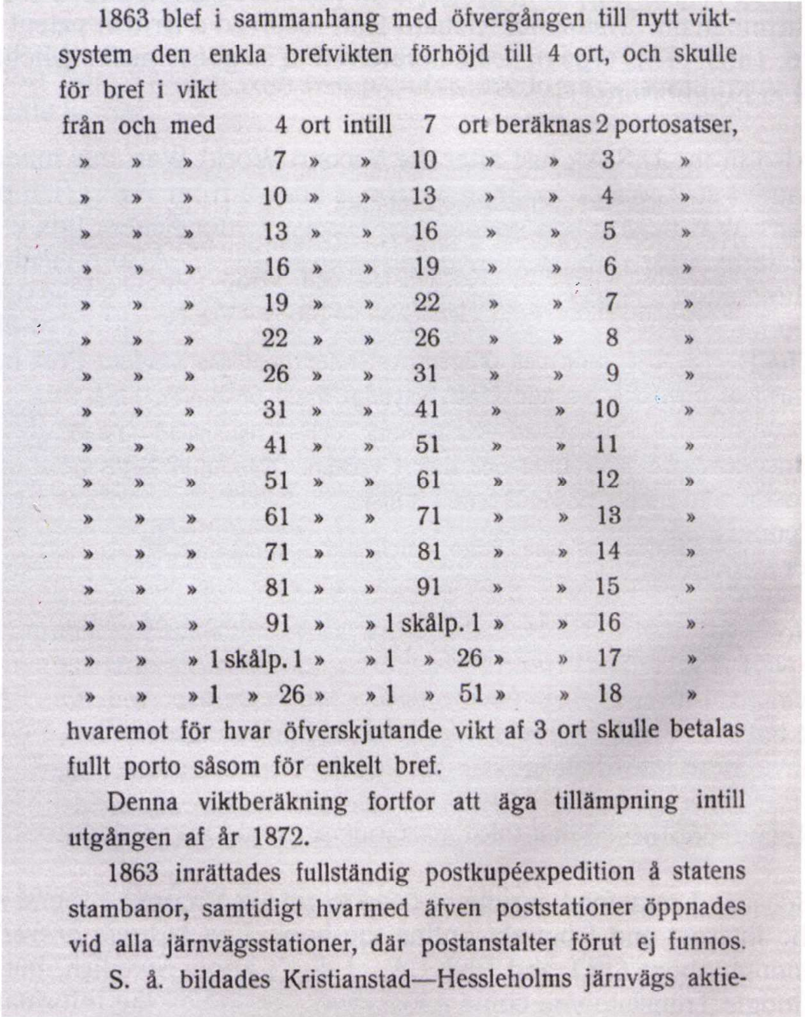
Starting January 1, 1880, the Swedes began to measure in grams and the postal weight limits now were 15g, 125g and 250g. [2], page 27.

From January 1, 1907 the postal weight limits were partly adjusted again, from now on they are at 20g, 125g, 250g, 500g and 1000g. [2], page 27.

In addition to and confirming Roland found a table, see Figure 3, which is on page 48 in [9] and also in [10].

Later, the Swedish Post Museum wrote to Roland that they did not have this hand letter scale in their collection and that they would like to keep the received picture.

In Sweden too, more versions of the goose neck can be found. Several have the engraving Frans Svanström Patent, see Figure 4. This letter scale weighs in grams and the stamp value is shown in Öre (Swedish cents). I have not seen the patent yet. The letter rates, see Figure 5, were valid in the period from January 1, 1880 to January 1885.



1863 blef i sammanhang med öfvergången till nytt viktsystem den enkla brefvikten förhöjd till 4 ort, och skulle för bref i vikt

från och med	4 ort	intill	7 ort	beräknas	2 portosatser,
» » »	7 »	»	10 »	»	3 »
» » »	10 »	»	13 »	»	4 »
» » »	13 »	»	16 »	»	5 »
» » »	16 »	»	19 »	»	6 »
» » »	19 »	»	22 »	»	7 »
» » »	22 »	»	26 »	»	8 »
» » »	26 »	»	31 »	»	9 »
» » »	31 »	»	41 »	»	10 »
» » »	41 »	»	51 »	»	11 »
» » »	51 »	»	61 »	»	12 »
» » »	61 »	»	71 »	»	13 »
» » »	71 »	»	81 »	»	14 »
» » »	81 »	»	91 »	»	15 »
» » »	91 »	»	1 skålp. 1 »	»	16 »
» » »	1 skålp. 1 »	»	1 » 26 »	»	17 »
» » »	1 » 26 »	»	1 » 51 »	»	18 »

hvaremot för hvar öfverskjutande vikt af 3 ort skulle betalas fullt porto såsom för enkelt bref.

Denna viktberäkning fortfor att äga tillämpning intill utgången af år 1872.

1863 inrättades fullständig postkupéexpedition å statens stambanor, samtidigt hvarmed äfven poststationer öppnades vid alla järnvägsstationer, där postanstalter förut ej funnos.

S. å. bildades Kristianstad—Hessleholms järnvägs aktie-

Figure 3. ⩓⩓ Table from page 48 of [9] and [10].

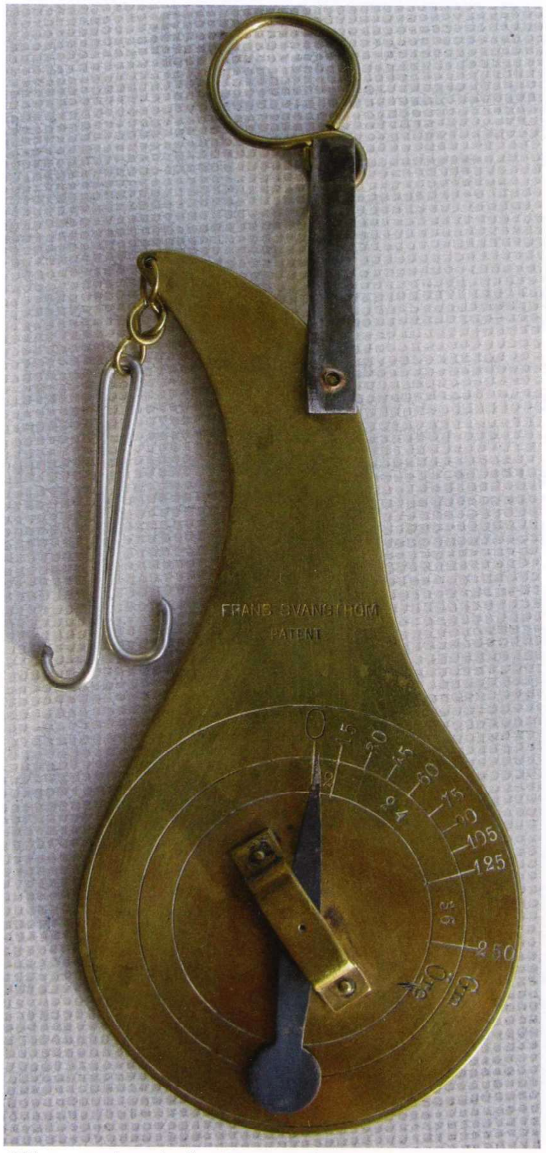


Figure 4. ⩓⩓ Frans Svanström Patent letter scale. (not entirely original).

Another unbranded one only has the weight in ORT, see Figure 6. This letter scale is therefore probably also from before January 1, 1873. Or it could be a replica. More recently are the well-made goose neck letter scales of Lindells Vågfabrik. They are available with one, two or three weighing ranges, see [5].

I do not know whether there is a direct link between the Swedish ORT-ENKLA letter scale and the letter scale design by Nathaniel Richard Hall. If that is the case, the starting year of the Swedish scale may be a bit later, for example only 1864 or 1865. But it could also be that the same design was made in two countries at the same time. That has happened more; think of the art of printing. In France, on June 27, 1865, Guillaume Pascal and Charles Bopp were also granted a patent on a very similar design, with number FR67869 [11].

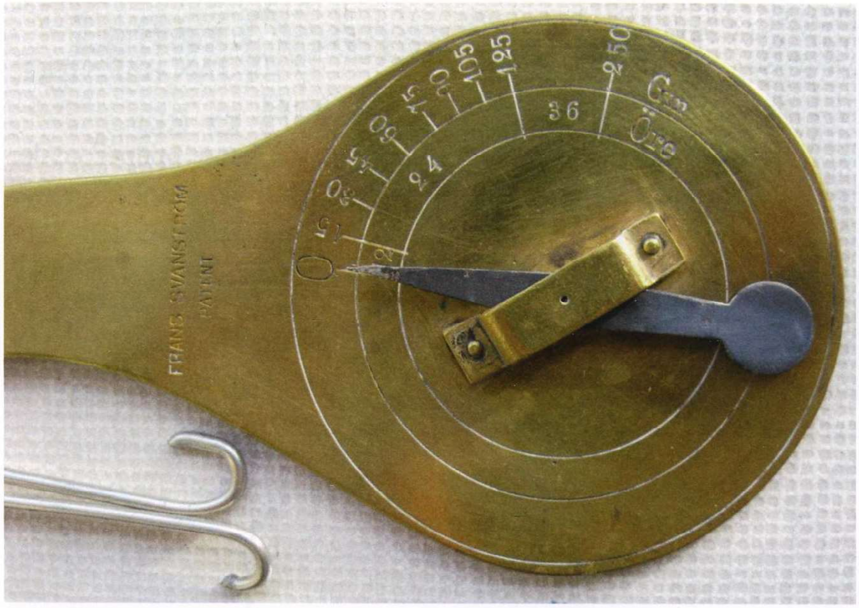


Figure 5. ▲▲ Frans Svanström letter scale with letter rates of 1880 – 1884.

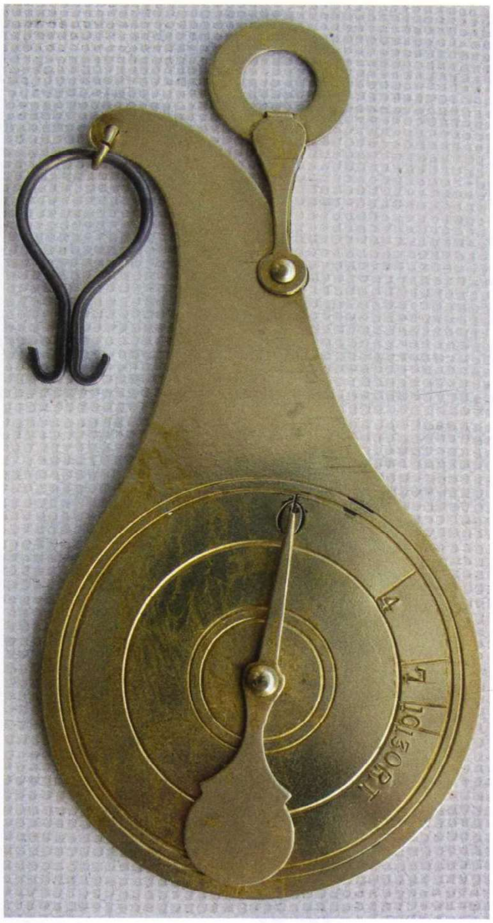


Figure 6. ➤➤ Swedish letter scale from the period 1863 – 1872, with only the weight indicated in ORT.

In conclusion: the Swedish ORT-ENKLA letter scale, see Figure 1 and Figure 2, dates from the short period 1863 – 1872 and is certainly special.

Note:

This article is still to be published in the Journal of the Dutch Society of collectors of Weights & Measures. In Dutch: *Meten & Wegen.* It was translated and slightly edited by the author.

Author's Biography:

Roland Obst is a former shopkeeper of a store in sports, guns & rare books. He was born April 4, 1942. After his retirement he started collecting letter scales. He contacted André Sol, his co-author, in 2010 about some letter scales. Since then they keep in contact by E-mail.

Sources:

[1] *Equilibrium,* winter 1979/80, Patently interesting, by Michael A. Crawforth, pp. 198-199.
[2] Brievenwegers uit Engeland, Rein Kok, *Meten & Wegen*, nr. 98, juni 1997, pp. 2325-2327 [in Dutch]
[3] Brievenweger naar Hall's patent, Rein Kok, *Meten & Wegen*, nr. 128, december 2004, pp. 3047-3049 [in Dutch]
[4] Handbrievenwegertjes, Rein Kok, *Meten & Wegen*, nr. 156, december 2011, pp. 3707 and pp. 3712-3717 [in Dutch]
[5] Part 16 of the Sol collection at: http://members.casema.nl/a.a.m.sol/wmijn16e.htm presents more information about the scales of Parnell in Loth, the Hund, the Pradel and the Lindells with three weighing ranges.
[6] In *Equilibrium* more images and texts about the goose neck scales can be found on: pages 219-220; page 428; pages 455-456; page 990; pages 1253-1254; page 1385; pages 1402-1403.
[7] In *Mass und Gewicht* on pages 1501 -1502 are two goose neck scales, here named Birnenförmige Waage translated pear-shaped scale. [in German]
[8] *Vad kostade brevet?* En bok om inrikes brevportot genom tiderna, Sven Carlin, 1975, Natur och Kultur, Stockholm, Sweden, ISBN 91-27-00172-5, pp. 26-27, 112-113 [in Swedish]
[9] *Anteckningar rörande postala förhållanden i Kristianstad och kringliggande orter förr och nu / ur minnet upptecknade*, P. Svenson, 1912, pp. 48 [in Swedish]
[10] *Ur Postala förhållanden i Kristianstad och kringliggande orter*, P. Svenson ,1924, pp. 48 [in Swedish]
[11] *Pèse-lettres ou Balances postales* – Postal scales – Briefwaage – guide de collection en français, Williams Archambaud, November 2010, ISBN 1978-2-7466-2764-2, pp. 165-167 [in French]

Letter Opener Scales, Part 2

BY JAN BERNING

On May 30, 1931, U.S. Patent Attorney Jacob Kaplan filed a patent application for a letter opener scale. Then, on January 15, 1936, Kaplan filed a second patent application for a different design of letter opener scale. Both patent applications were for spring scales incorporated into the handle of a letter opener. According to his obituary in the *Washington Post* Kaplan died on September 10, 1936. Patent number 2,072,037 was issued on February 23, 1937, to *Jacob Kaplan, Washington, D.C.; Ester Kaplan, administratrix of said Jacob Kaplan, deceased, assignor to Ester Kaplan, Washington, D.C.* (Figure 24) Patent number 2,097,837 was issued November 2, 1937, with the same notation as Kaplan's first patent. Since Kaplan himself was deceased, it is believed that neither of these letter opener scales were ever made or marketed.

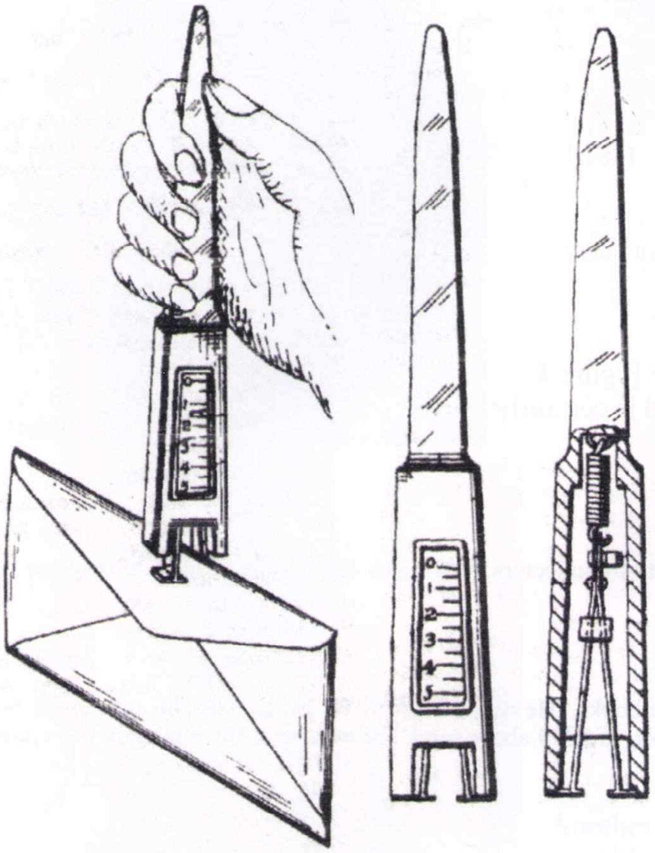
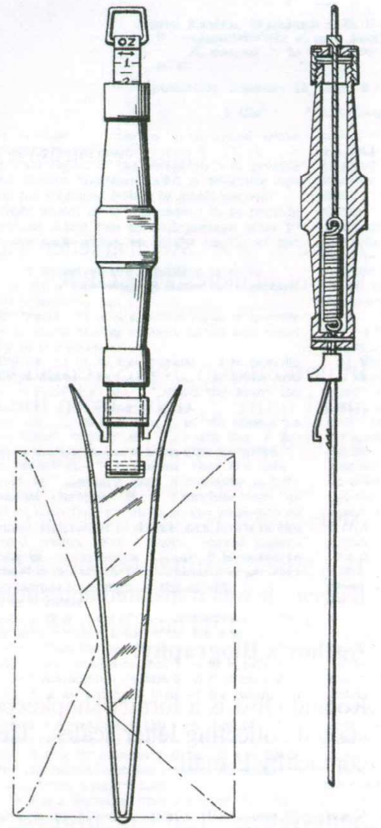


Figure 24. ◄◄ Patent number 2,072,037 was issued on Feb. 23, 1937 for Kaplan's *Letter Scale*. The patent drawing shown here shows clearly the spring mechanism as well as the letter opener style of his invention.

Figure 25. ►► Patent number 2,097,837 was issued on November 2, 1937 for Kaplan's *Combined Letter Opener and Postage Scale.* This letter opener scale was equipped with a zero adjusting screw incorporated into the top of the handle. The front view, at left, shows the scale protruding from the handle. The letter clip is shown in the side view at right.



August 1938 saw the introduction, in *Popular Science Magazine*, (Figure 27) of a bakelite letter opener scale. (Figure 26) The yellow example shown below measures 10¾" as a letter opener and 12" extended as shown in the photo below. The top example is green with black.

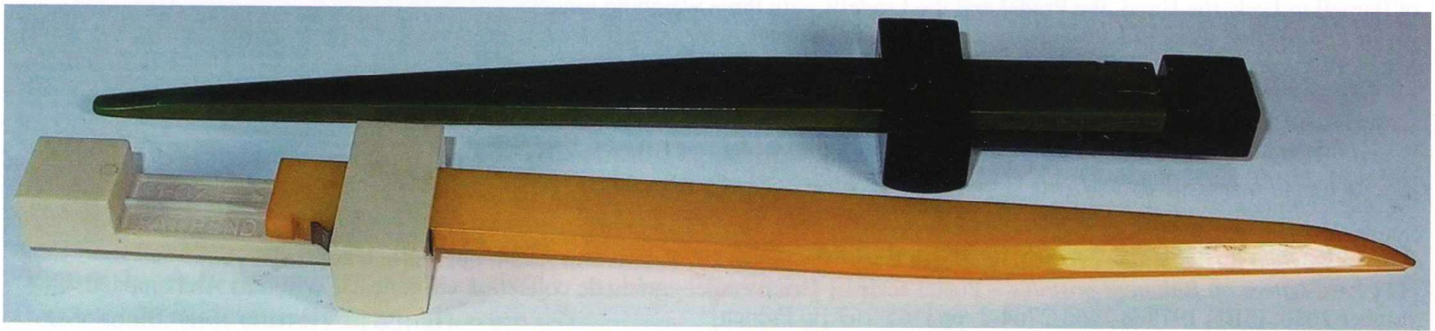
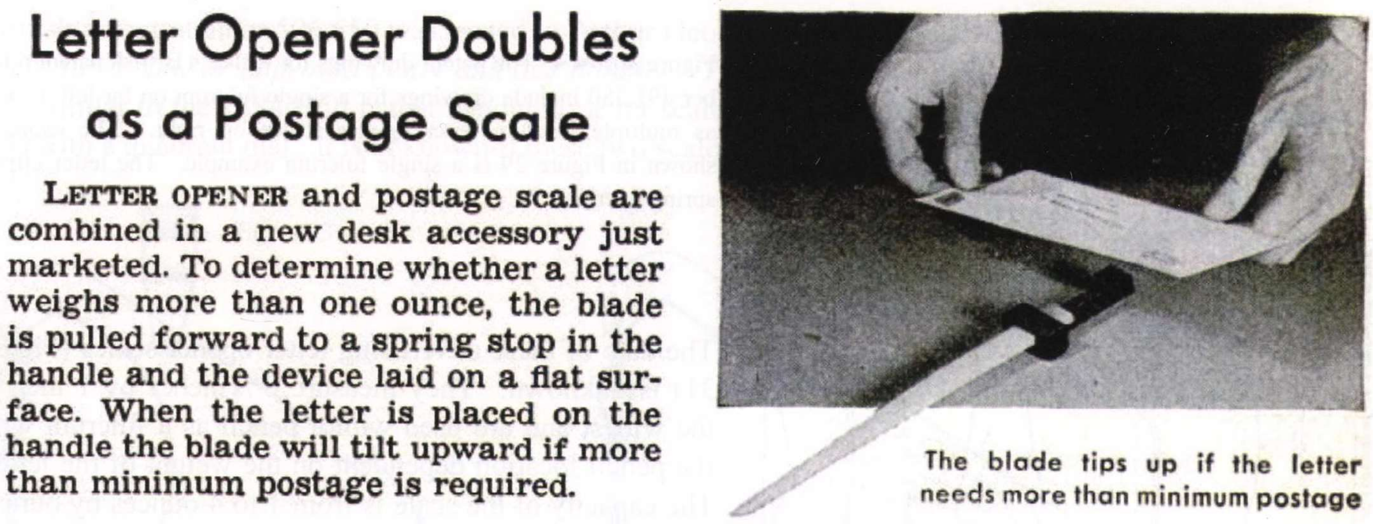


Figure 26. ▲▲ The only markings on these letter opener scales are *1-OZ* and *Pat. Pend.* No patent has been located.



Letter Opener Doubles as a Postage Scale

LETTER OPENER and postage scale are combined in a new desk accessory just marketed. To determine whether a letter weighs more than one ounce, the blade is pulled forward to a spring stop in the handle and the device laid on a flat surface. When the letter is placed on the handle the blade will tilt upward if more than minimum postage is required.

The blade tips up if the letter needs more than minimum postage

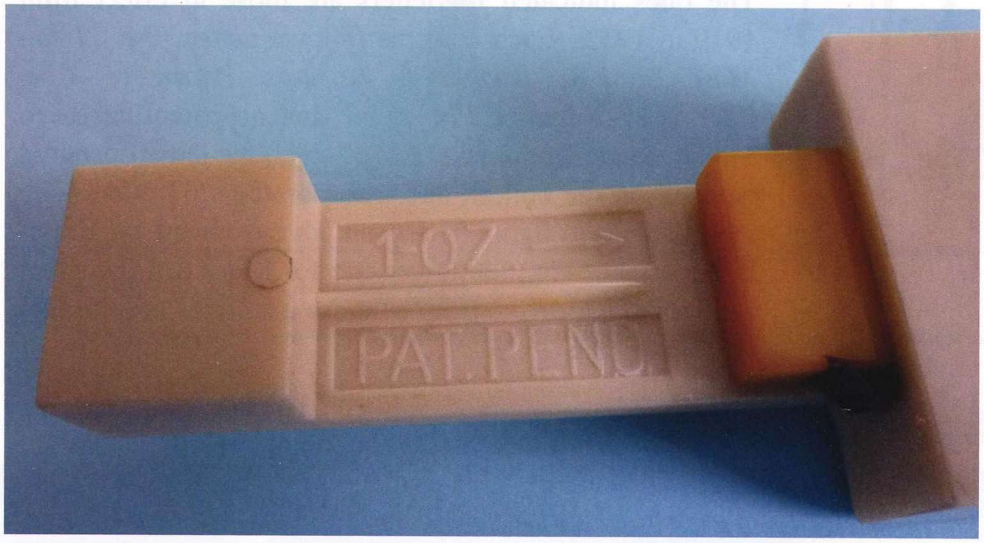


Figure 27. ▲▲ The announcement article in the August 1938 issue of *Popular Science Magazine.*

Figure 28. ◀◀ The only markings on these letter opener scales are *1-OZ* and *Pat. Pend.* The spring stop can be seen at lower right.

British Patent number 491,380 was issued on August 29, 1938, to Dr. Georg Rülke of Brand-Erbisdorf, Saxony, Germany. The patent covered a letter opener scale with a single or multiple fulcrums. The example (Figure 29) in my collection has a single fulcrum, is made from nickel or chrome plated steel and measures 8¾” long by 1$^{1}/_{8}$” at its widest point. An advertisement for Berger u Wirth is etched into the metal. An internet search for the company shows that the company had offices in Leipzig, New York, and London. Berger & Wirth was manufacturer of dry pigments and inks for all facets of the printing industry. Since *und* in German translates as *and* in English, this letter opener was meant for the German location of the company.

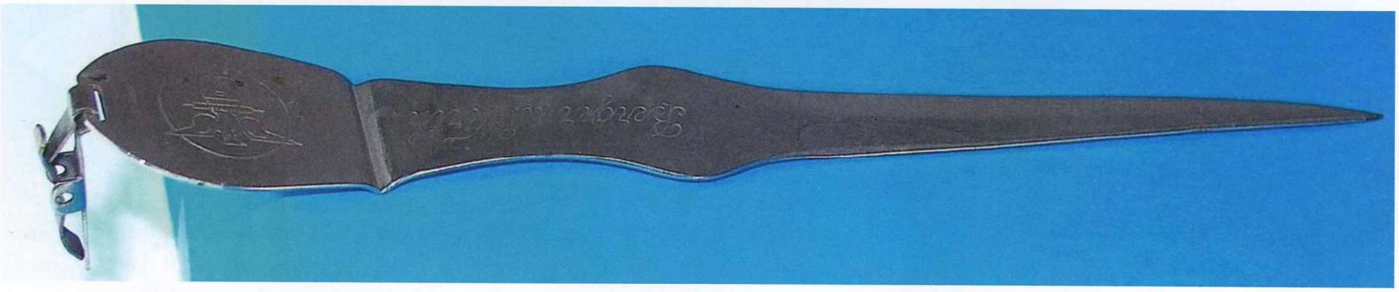


Figure 29. ▲▲ This Rülke letter opener scale based on British patent number 491,380 (Figure 30) has a single fulcrum.

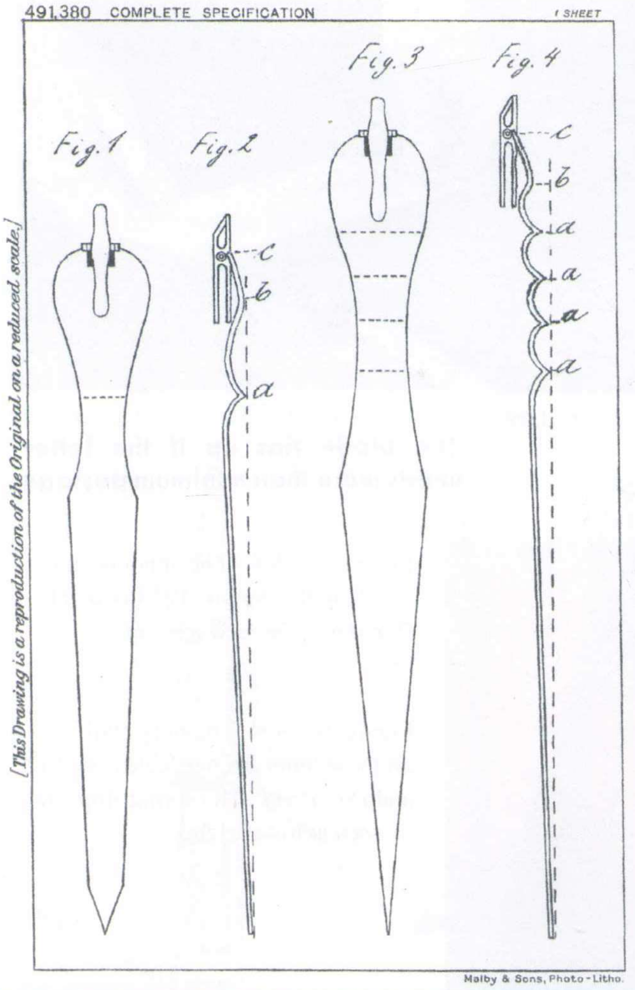

491,380 COMPLETE SPECIFICATION
1 SHEET
Fig. 1
Fig. 2
Fig. 3
Fig. 4
c
b
a
[This Drawing is a reproduction of the Original on a reduced scale.]
Malby & Sons, Photo-Litho.

Figure 30. ≺≺ The patent drawings for Rülke's British patent number 491,380 include drawings for a single fulcrum on far left as well as multiple fulcrum letter opener scales on right. The example shown in Figure 29 is a single fulcrum example. The letter clip is spring operated.

The date of these advertising letter opener scales (Figure 31) is unknown. They measure 8^{7}/8 inches by 1 inch at the widest and are used with a pencil as a fulcrum with the pencil location dependent on the weight of the letter. The capacity of the scale is from 1 to 4 ounces by ounce. The rates indicated for letters are those in effect from 1919 to 1932. Each reads as follows *Letters 2 ¢ 1 oz., Mdse. 1¢ 1 oz., Books, Cir. 1¢ 2 oz., Papers 1¢ 4 oz.* Each is also marked *Pat. Pend.*, but no patent has been found. Made from nickel plated steel, the letter opener is beveled on the bottom and incorporates a 6" ruler. The top example in figure 31 has an advertisement for Hanover Insurance Co., the lower one for Rider & Dickerson, printers in Chicago. Both of these examples are missing their letter clip.

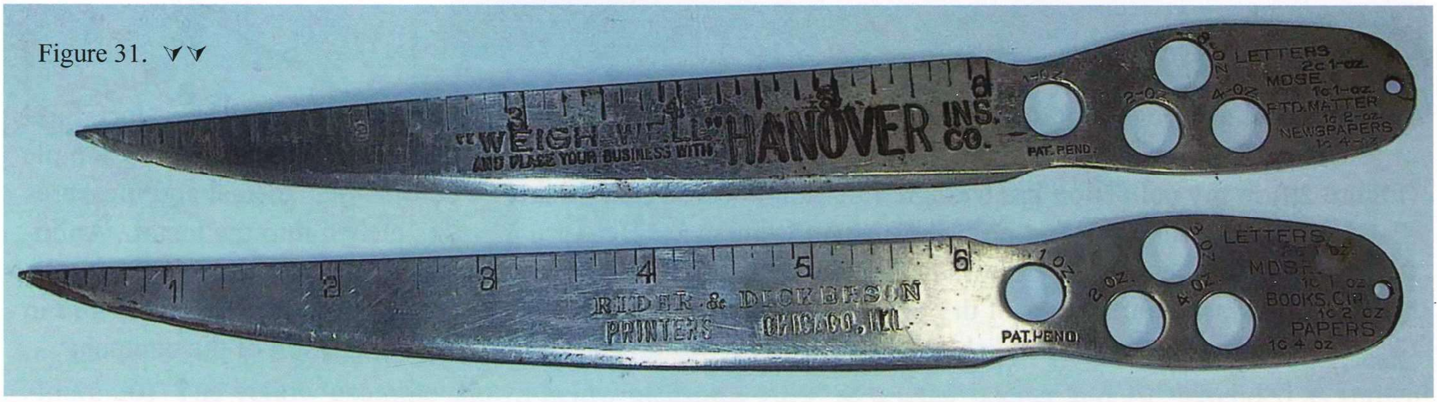


Figure 31. ⋎⋎

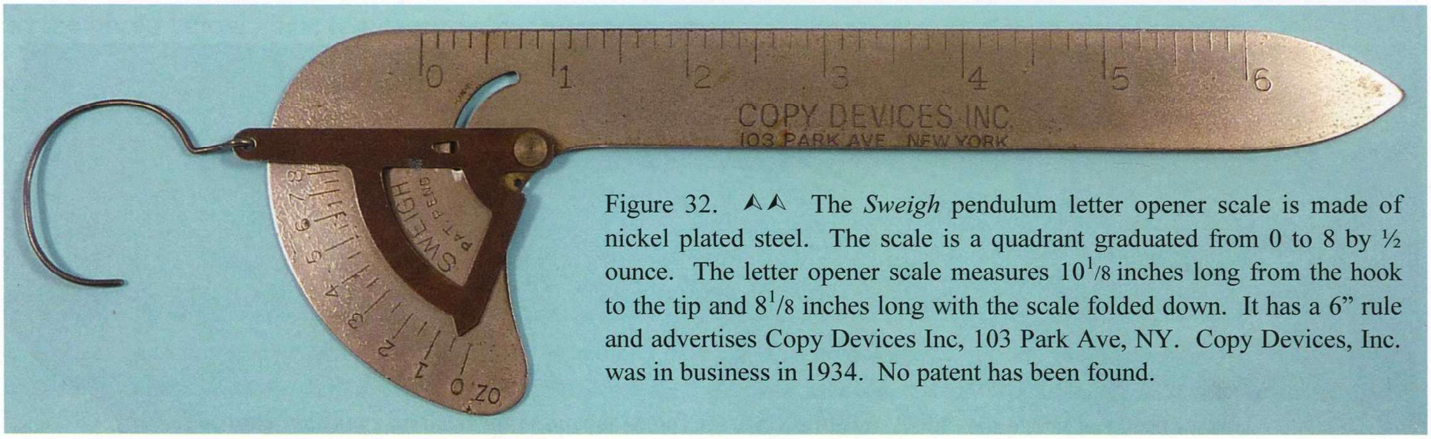


Figure 32. ⋏⋏ The *Sweigh* pendulum letter opener scale is made of nickel plated steel. The scale is a quadrant graduated from 0 to 8 by ½ ounce. The letter opener scale measures 10^{1}/8 inches long from the hook to the tip and 8^{1}/8 inches long with the scale folded down. It has a 6" rule and advertises Copy Devices Inc, 103 Park Ave, NY. Copy Devices, Inc. was in business in 1934. No patent has been found.

British patent number 506,650 was issued to Arthur George Rowe of Romford, Essex, England on June 1, 1939 for *A New or Improved Letter and like Balance.* The patent covered a pendulum letter scale (Figure 33) similar to the 1884 Hall patent pendulum letter scale, but it also covered a letter opener scale (Figure 34) with a quadrant dial. It is unknown if these two scales were ever manufactured.

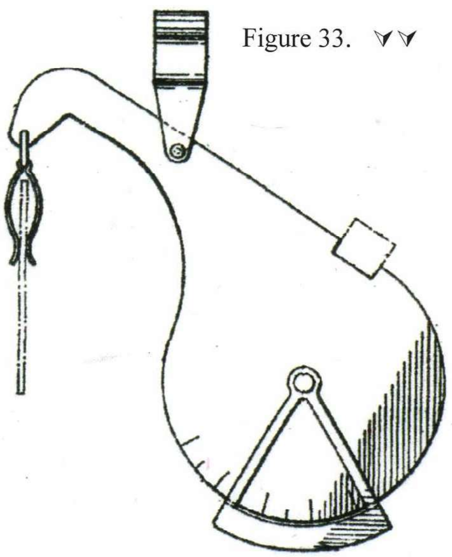


Figure 33. ⋎⋎

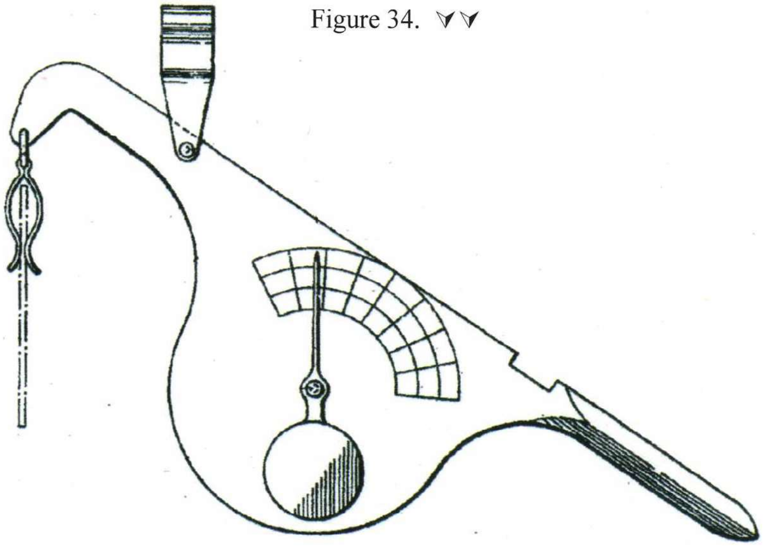


Figure 34. ⋎⋎

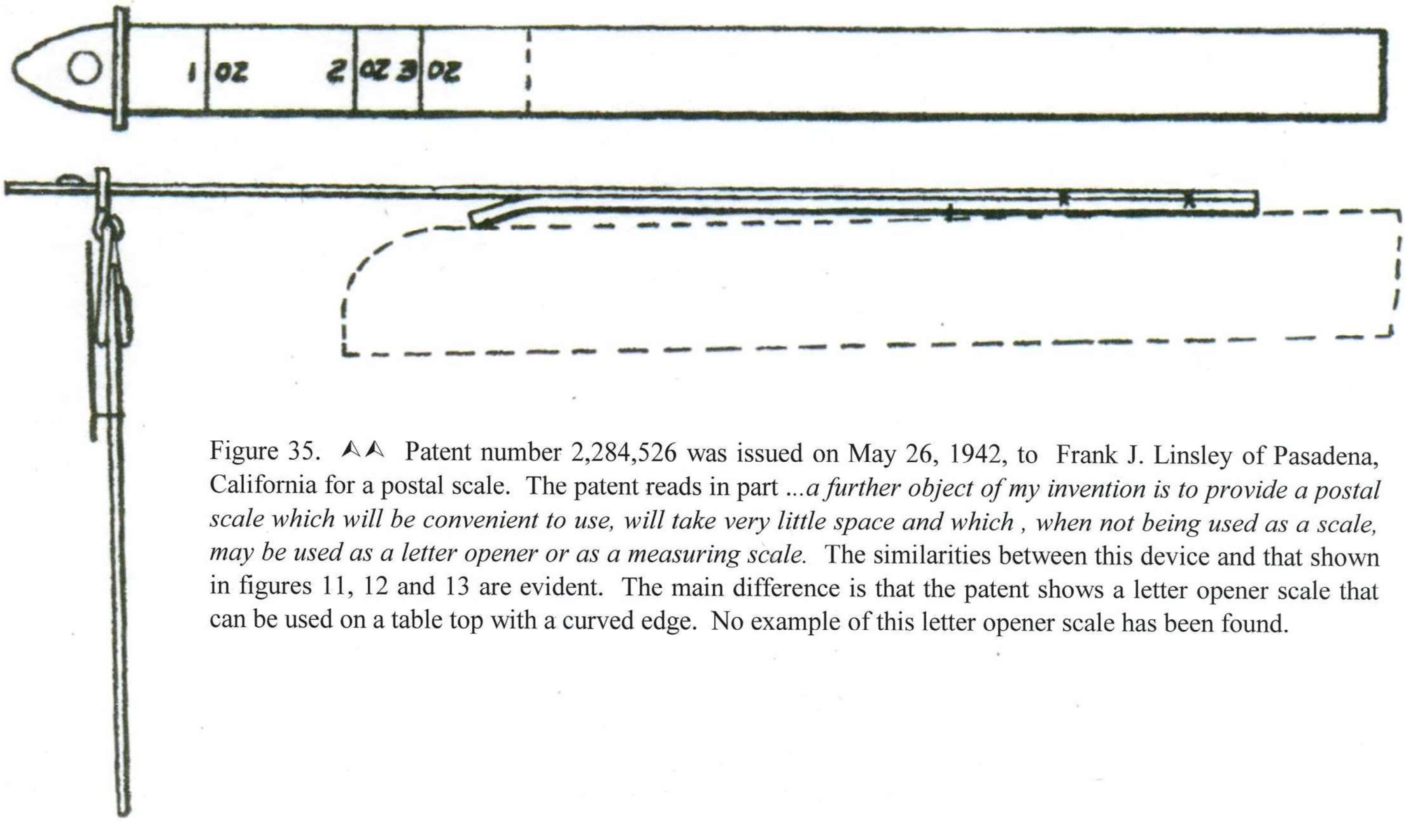


Figure 35. ⋏⋏ Patent number 2,284,526 was issued on May 26, 1942, to Frank J. Linsley of Pasadena, California for a postal scale. The patent reads in part *...a further object of my invention is to provide a postal scale which will be convenient to use, will take very little space and which , when not being used as a scale, may be used as a letter opener or as a measuring scale.* The similarities between this device and that shown in figures 11, 12 and 13 are evident. The main difference is that the patent shows a letter opener scale that can be used on a table top with a curved edge. No example of this letter opener scale has been found.

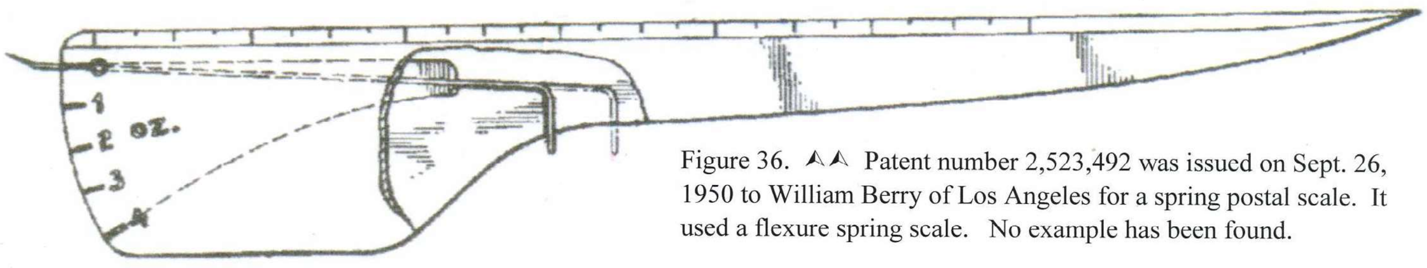
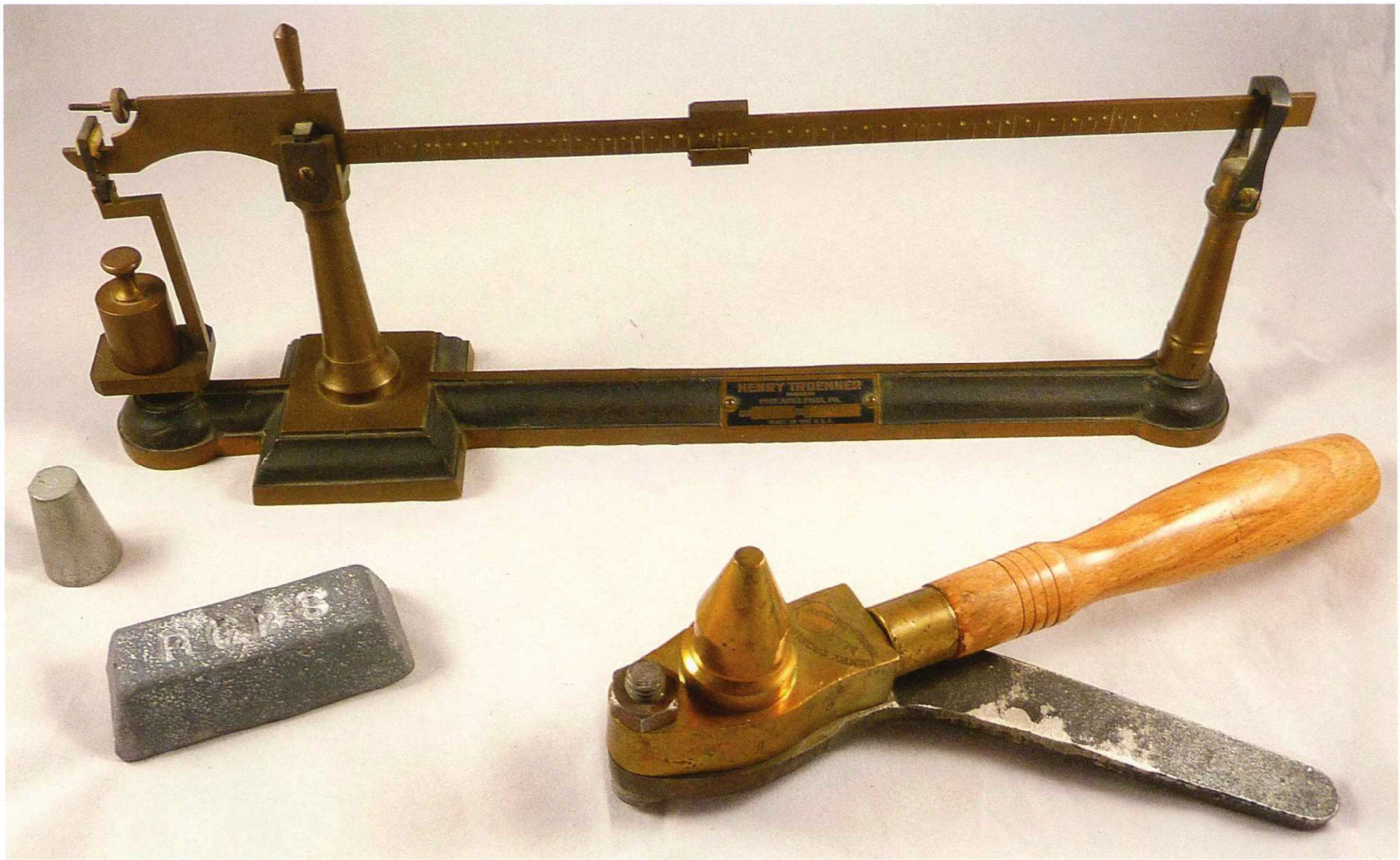


Figure 36. ⋏⋏ Patent number 2,523,492 was issued on Sept. 26, 1950 to William Berry of Los Angeles for a spring postal scale. It used a flexure spring scale. No example has been found.

From the Collection of

BILL & JAN BERNING



The scale shown here is a solder balance and was manufactured by Troemner in the early 1900s. It is in near mint condition complete with a Troemner marked mold for casting a sample of solder, a solder sample, a lead ingot and the 50 per cent brass test weight that came with the balance. The balance is of cast brass or bronze and measures 14 inches long and $2^3/4$ inches wide. These balances are so accurate that one ISASC member still uses them in his metal recycling business.

Henry Troemner's Solder Testing Balance is described in his 1921 catalog as follows: *With this outfit can be instantly ascertained the percentage of tin in solder; it is only necessary to make a cast of the material in the mould, place this on the pan of scale, move the weight out along the beam until the scale balances, which will show the percentage of tin from o to 100 per cent. On the back of beam is a scale to show the percentage of antimony in material known to be made up of lead and antimony. The scale is substantially and accurately made with Agate bearings.*

The outfit consists of Balance, Mould and 50 per cent Brass [Test] *Weight.*

Note:
To read more about Troemner solder scales see the article "Why Weigh Solder?" in *Equilibrium* Issue 4 of 2000, pages 2525-2529.

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QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2018 ISSUE NO. 2 PAGES 4469- 4496

Cover Picture

The scale on our cover was manufactured by Continental Scale Works in Chicago. It was made to be used by coin operated scale and vending machine operators to weigh pennies. It is complete with a brass steelyard, and a bucket as well as a folding tripod. The beam measures 16" long, the tripod measures 11¼" tall and the bucket is 5" in diameter. The capacity is 500 cents in 2 cent increments, but it also computes a percentage of 500 so an operator can weigh out pennies for the business owner. The beam is marked Continental Scale Works, Chicago, IL and Pat. Apld. For, but no patent has been found. It also came with a small carrying case.

Bill Berning Collection.

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McGiehan's Unique Postal

BY BILL BERNING

United States Patent number 518,725 (Figure 1) begins *Be it known that I, Isaac S. McGiehan, of the city, county, and State of New York, have invented a new and useful Improvement in Postal Scales, of which the following is a specification.*

This invention relates to scales for weighing postal matter, such as letters, newspapers, books, &c.

It has for its object to provide a scale that will indicate the amount of weight of the package and at the same time show the class of mail to which it belongs and the amount of postage necessary to apply…

The crude patent drawing and description are similar to many other computing postal scales. Most are spring scales, but this one is a pendulum scale. The patent was filed August 11, 1893 and issued April 24, 1894.

Isaac S. McGiehan was a lawyer and inventor holding many patents including those for a garbage burning furnace, metal bending and forming machine, bicycle wheel rim and tire as well as an elevated rail structure. The 1898 and 1900 *Bender's Lawyers' Diary and Directory for the State of New York* lists Isaac S. McGiehan, 26 Cortlandt, New York City. He is also listed as Patent Lawyer at the same Cortlandt address in *Trow's Business Directory of the Boroughs of Manhattan and the Bronx City of New York*, 1898.

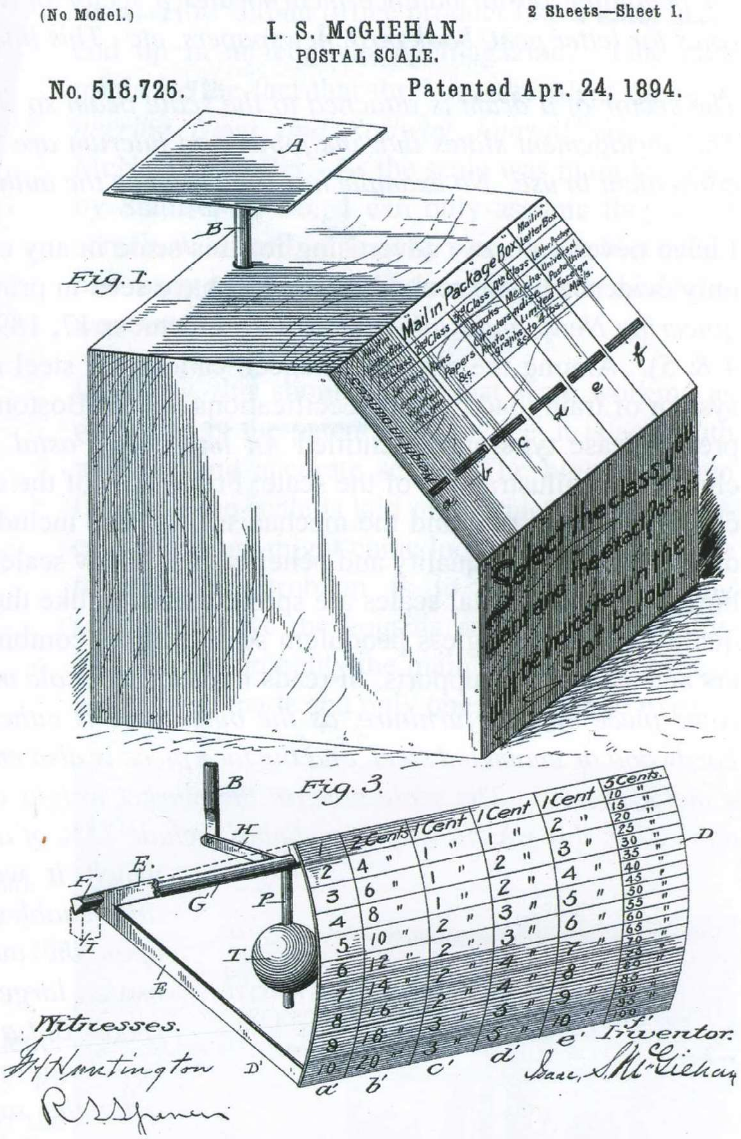


Figure 1. ⮝⮝ Isaac McGiehan's Postal scale patent issued Apr. 24, 1894.

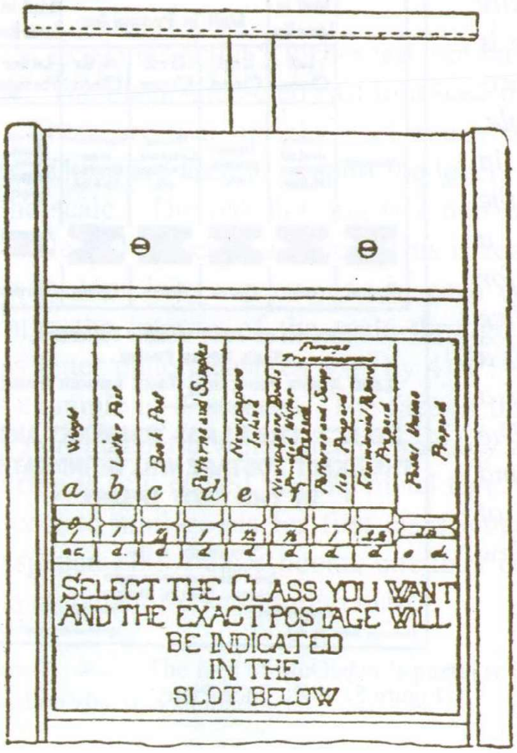

Weight
Letter Post
Book Post
Patterns and Samples
Newspaper Inland
a
b
c
d
e
SELECT THE CLASS YOU WANT AND THE EXACT POSTAGE WILL BE INDICATED IN THE SLOT BELOW

Figure 2. ⮜⮜ Michael Crawforth's drawing based on McGiehan's British patent No. 8127 of 24 Apr 1894. Shown on page 622 of EQM issue 4, of 1983. It was shown in the article as Fig 59 where it was described as *McGiehan's graduated drum*.

In an article entitled *Patent Postals* by Michael Crawforth in *Equilibrium* 1983 issue number 4, pages 621-622 the scale is illustrated (Figure 2). Crawforth describes the basic workings of the scale as follows:

"A pendulum postal balance incorporates a sector of a drum which is marked with the weight and postage rates for letter post, book post, newspapers, etc. This information is displayed through slots in the casing."

The sector of a drum is attached to the scale beam so that, as the beam tilts, the drum rotates past the slots. The abridgement states that the joints and fulcrum are of the knife-edge type. The top-pan design would be convenient in use. No example has been seen by the author.

I have never seen any advertising for this scale in any catalogs. The only evidence of the scale's existence I have seen in print is from *Engineering News and Railway Journal* of October 17, 1895 (Figures 3, 4 & 5). Among the articles on specifications for steel rails, tonnage system of train loading and specifications for the Boston Subway is a press release type article entitled *An Improved Postal Scale*. It includes three illustrations of the scale: Front view of the entire scale, a close-up of the front and the mechanism. It also includes a full column describing the quality and benefits of this new scale, pointing out how most other postal scales are spring scales, unlike the long-lasting quality of this springless pendulum scale with its combination of levers and steel knife supports. It reads in part: *The scale makes a handsome piece of desk furniture, as the outer case is either of polished hardwood or enameled steel, and the face piece is also enameled upon a metal ground. The scale now on the market weighs only up to 17 ounces, as this weight would probably include 75% of all the uses to which it would be put, and enables the figures upon the indicator to be made large and easily read. But a 4 lb. scale is now being made upon exactly the same principle, though slightly larger in its dimensions, for the reason stated.... As a postal scale, its use for some time in this office has proved that it is a money-saving as well as a labor-saving device. The scale is manufactured and sold by Stauffer & Co., of 26 Cortlandt St., New York city.*

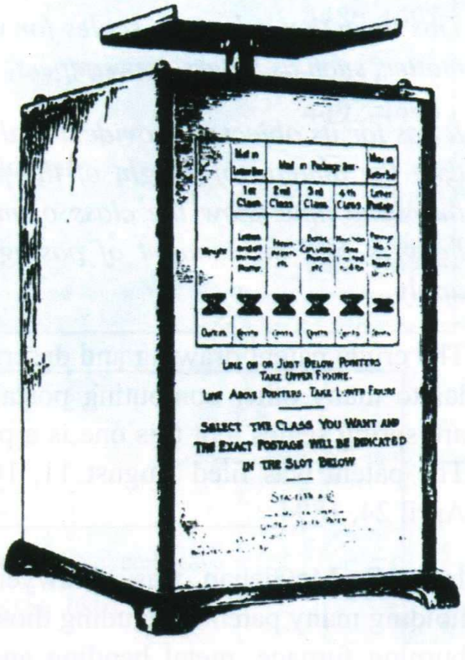


Figure 3. ⋀⋀ Improved Postal Scale.

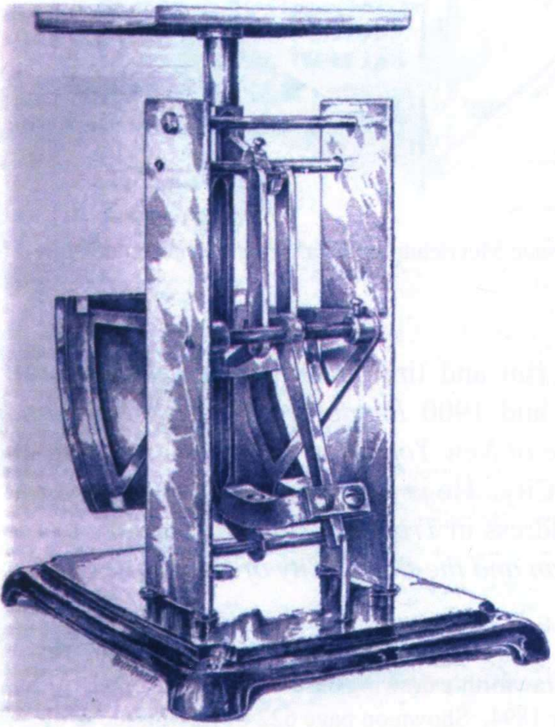
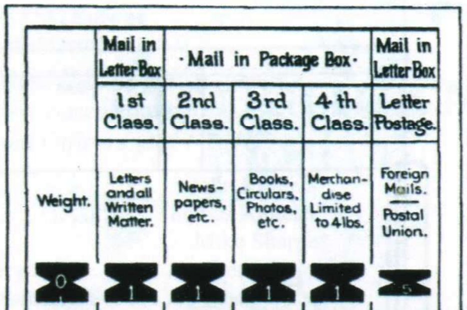


Figure 4. ⋀⋀ Rear View of Mechanism.


Mail in Letter Box
·Mail in Package Box·
Mail in Letter Box
1st Class.
2nd Class.
3rd Class.
4th Class.
Letter Postage.
Weight.
Letters and all Written Matter.
News-papers, etc.
Books, Circulars, Photos, etc.
Merchan-dise Limited to 4 lbs.
Foreign Mails. Postal Union.
Ounces.
Cents.
Cents.
Cents.
Cents.
Cents.
LINE ON OR JUST BELOW POINTERS, TAKE UPPER FIGURE.
LINE ABOVE POINTERS, TAKE LOWER FIGURE.
SELECT THE CLASS YOU WANT AND THE EXACT POSTAGE WILL BE INDICATED · IN THE SLOT BELOW ·
STAUFFER & CO.
SOLE MANUFACTURERS UNDER UNITED STATES PATENTS.
26 CORTLANDT ST.
NEW YORK.
PATENTED, APRIL 24, 1894.
COPYRIGHTED, MARCH 9, 1894.
Figure 5. ⋀⋀ Face Plate.

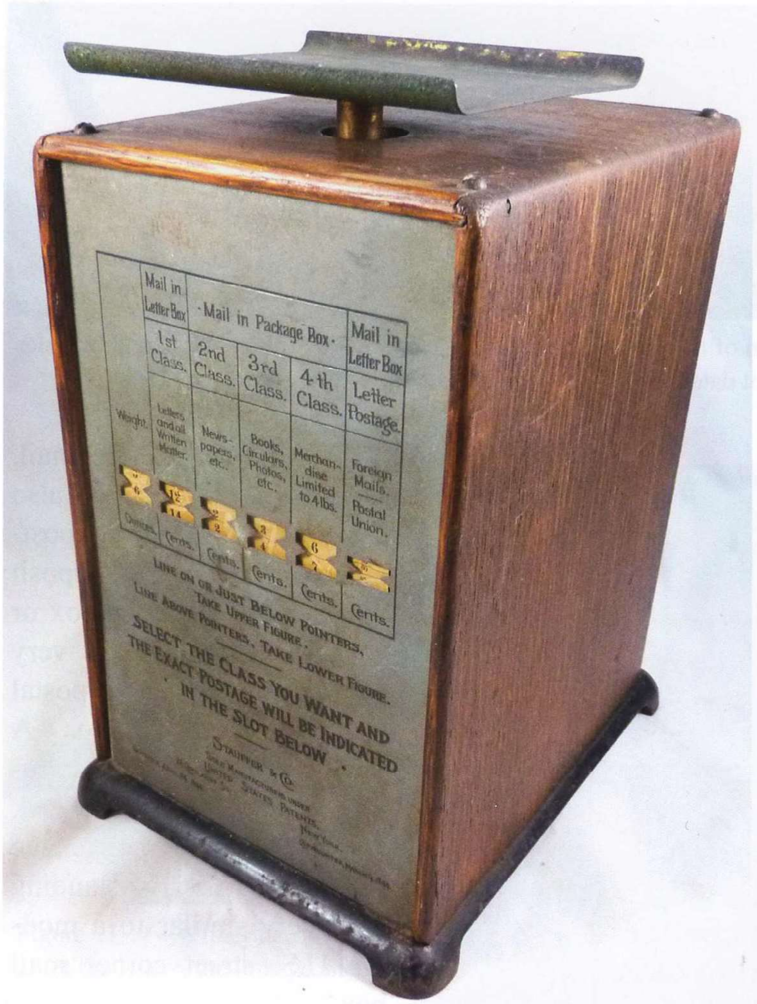
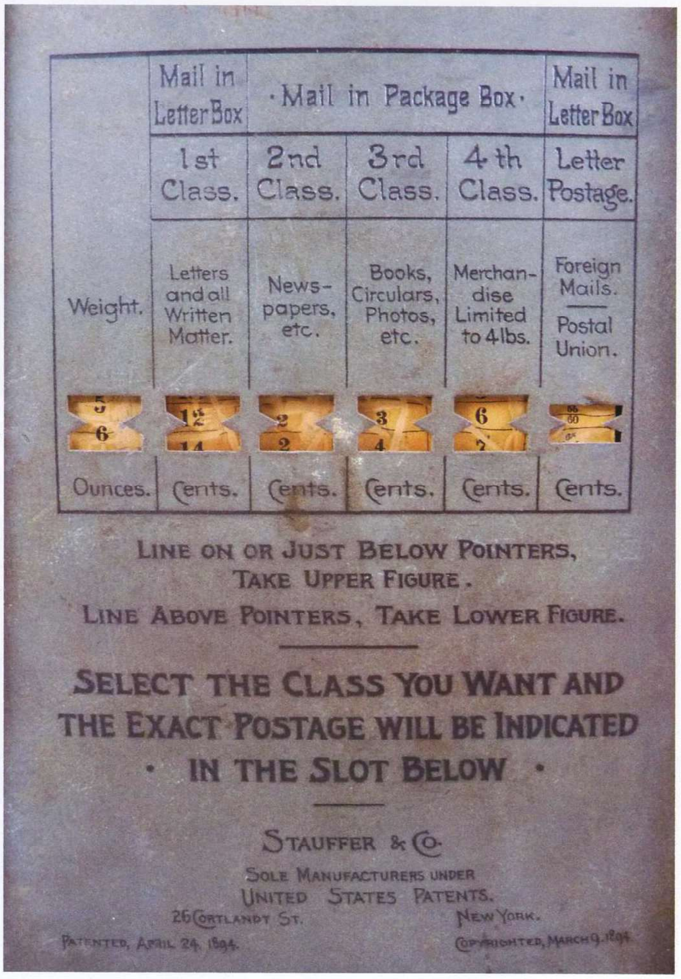


Figure 6. ⮝⮝ McGiehan's postal scale. The case is made of dark oak, with the base being made of cast iron and the letter plate is brass.

The scale stands about 9 inches tall, not including the letter plate. The black enameled cast iron base measures 7½" by 6". There are two upright steel plates screwed into the base. These are used to support the levers and mechanism of the scale. The oak housing is a non-structural part of the scale and serves as a cover. This is secured to the iron base by four long screws, one in each corner extending through the interior of the scale through the base. The brass letter plate measures 4½" by 4$^{1}/_{8}$". The capacity of this example is 17 ounces. The face of this scale is made of a non-magnetic white metal, probably zinc. All of the lettering is acid etched into the metal face. It will compute the cost to mail goods for first class letters, second class newspapers, third class books, circulars or photos, fourth class merchandise and foreign mail.

Engineering News and Railway Journal did not accept any advertising: it was all articles about building railroads, canal locks and steam locomotives. How did an office product like a letter scale end up in an engineering magazine? One clue might be the fact that the Vice-President of *Engineering News and Railway Journal* was David McNeely Stauffer. As the scale was manufactured by Stauffer & Co., I can only assume they were somehow related, especially since Isaac McGiehan had many mentions in *Engineering News and Railway Journal.*

In theory, this should be a great scale working as described in the patent. In practice, it is a smooth working and accurate scale. The biggest design flaw is if the scale is laid on its side the knife edges and linkage might come loose. The only way to remedy this problem is to remove four long screws, remove the housing and reattach the levers. This is probably the main reason few of these scales were made and only one is known to exist.



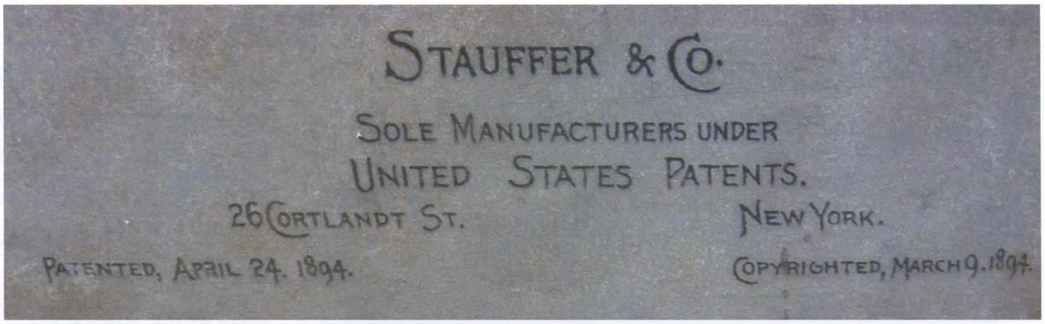
	Mail in Letter Box	· Mail in Package Box ·			Mail in Letter Box
	1st Class.	2nd Class.	3rd Class.	4th Class.	Letter Postage.
Weight.	Letters and all Written Matter.	News-papers, etc.	Books, Circulars, Photos, etc.	Merchan-dise Limited to 4 lbs.	Foreign Mails. Postal Union.
Ounces.	Cents.	Cents.	Cents.	Cents.	Cents.

LINE ON OR JUST BELOW POINTERS,
TAKE UPPER FIGURE.
LINE ABOVE POINTERS, TAKE LOWER FIGURE.

SELECT THE CLASS YOU WANT AND
THE EXACT POSTAGE WILL BE INDICATED
· IN THE SLOT BELOW ·

STAUFFER & CO.
SOLE MANUFACTURERS UNDER
UNITED STATES PATENTS.
26 CORTLANDT ST. NEW YORK.
PATENTED, APRIL 24. 1894. COPYRIGHTED, MARCH 9. 1894.

Figure 7. ⮞⮞ The face of McGiehan's postal scale is photo engraved on zinc or a similar metal.



Stauffer & Co.

Sole Manufacturers under

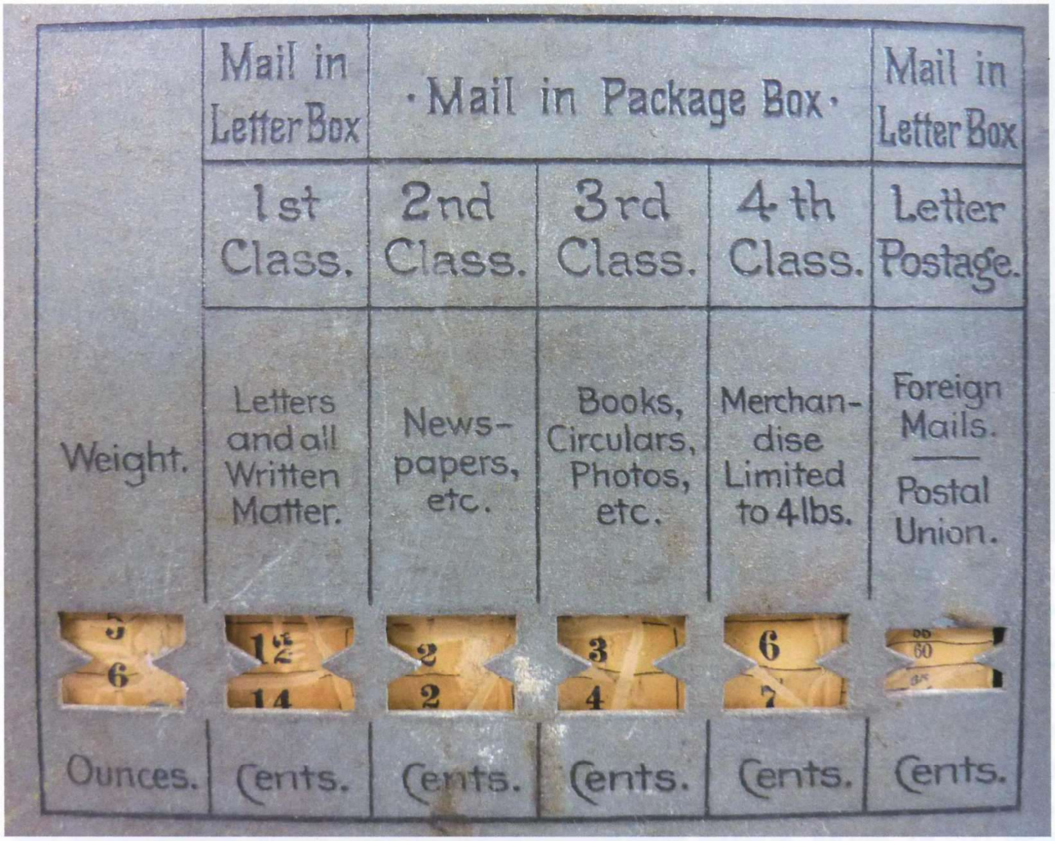
United States Patents.

26 Cortlandt St. New York.

Patented, April 24. 1894. Copyrighted, March 9. 1894.

Figure 8. ⮝⮝ The bottom of the face plate names Stauffer & Co. manufacturers and includes patent as well as a copyright dates.

The name at the bottom of the face (Figure 8) reads Stauffer & Co, Sole Manufacturers under United States patents 26 Cortlandt St, New York Patented April 24, 1894, Copyrighted March 9, 1894. There are six windows in the front plate, (Figure 9) one to view the weight and five more for the different classes of mail. Each class of mail is also labeled with the correct postal box in which to deposit the mail, either letter box or package box. This is very unusual to see on a postal scale, probably unique. A letter box is a small box usually mounted on a sidewalk lamp post while a package box is a larger free-standing box, very similar to a modern U.S. street corner mail box.

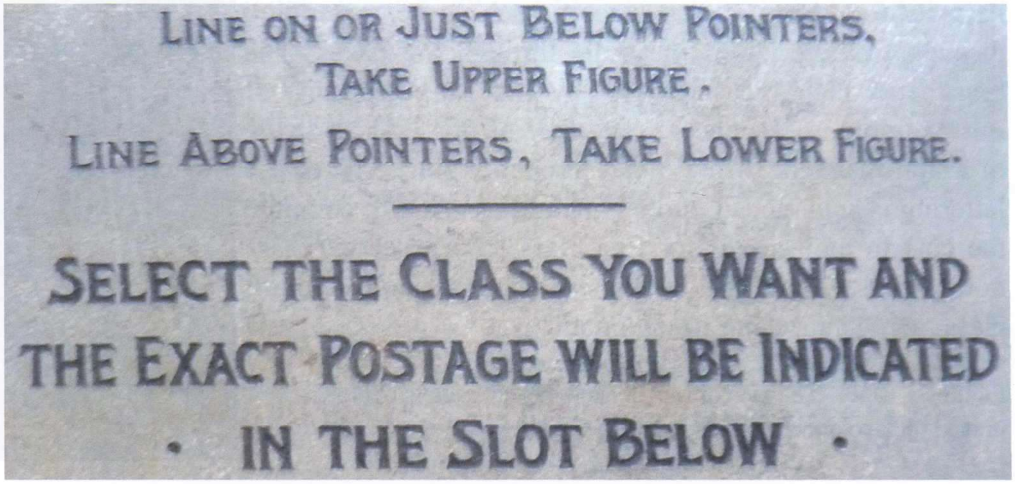


	Mail in Letter Box	· Mail in Package Box ·			Mail in Letter Box
	1st Class.	2nd Class.	3rd Class.	4th Class.	Letter Postage.
Weight.	Letters and all Written Matter.	News-papers, etc.	Books, Circulars, Photos, etc.	Merchan-dise Limited to 4 lbs.	Foreign Mails. Postal Union.
Ounces.	Cents.	Cents.	Cents.	Cents.	Cents.

Figure 9. ⮜⮜ There are six windows on the face plate. The first one is for the weight of the mail while the others determine postage needed for mailing.

The instructions (Figure 10) for use of McGiehan's scale are etched on the center of the scale face plate.

Figure 10. ⮞⮞ The instructions are shown in the center of the face plate on McGiehan's scale. This text is etched into the center just below the chart windows. Note: the text indicates the *postage will be indicated in the slot below* when in reality the slots are above the text.



LINE ON OR JUST BELOW POINTERS.
TAKE UPPER FIGURE.

LINE ABOVE POINTERS, TAKE LOWER FIGURE.

SELECT THE CLASS YOU WANT AND
THE EXACT POSTAGE WILL BE INDICATED
· IN THE SLOT BELOW ·

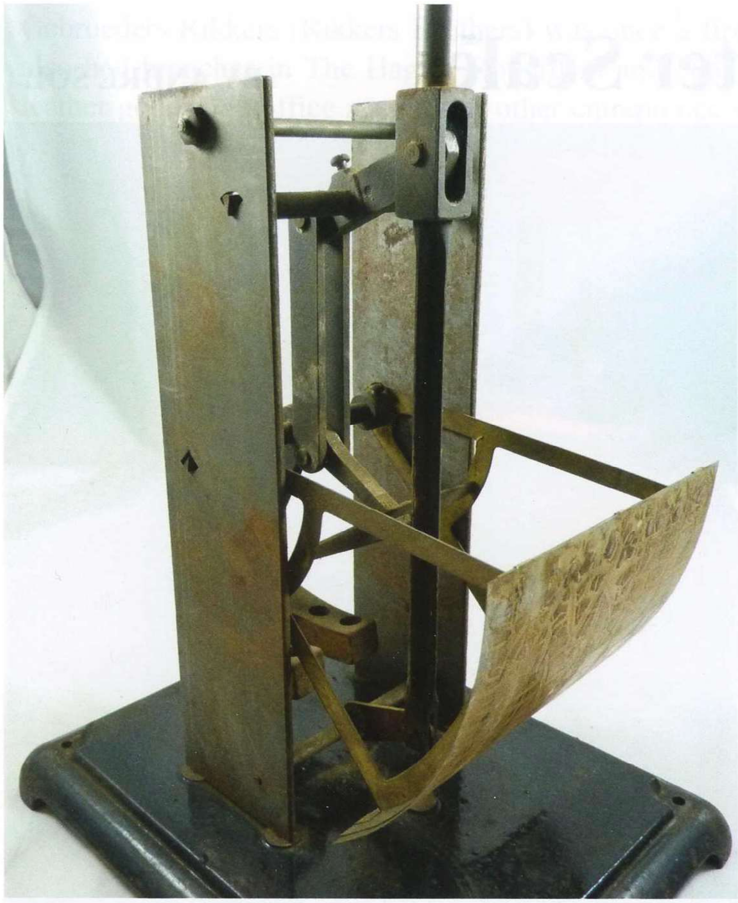


Figure 11. ▲▲ Interior view of the scale from the front showing all of the levers, the linkage and the chart.

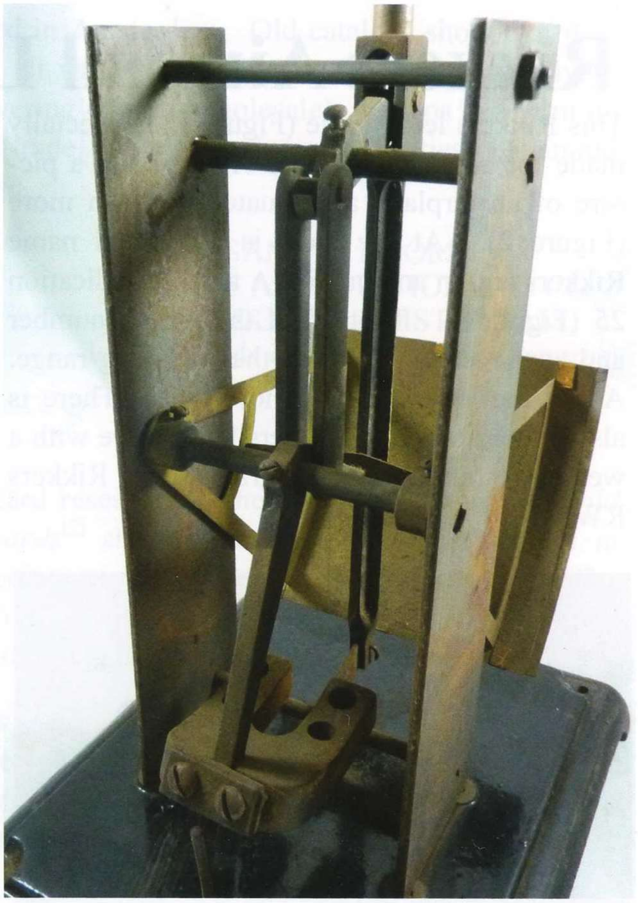


Figure 12. ▲▲ Interior view of the scale from the rear. The large arc on the right is the back of the chart. The forked weight hanging between the upright steel plates at the lower center is the pendulum.

The chart on this scale is in poor condition. The left side indicates ounces to a capacity of 17 ounces. The second column is first class at 2¢ per ounce. In the third column, second class newspapers are shown with a maximum of 5¢ for 17 ounces, the fourth column is third class books with a maximum of 9¢ for 17 ounces, the fifth column is for fourth class merchandise with a maximum of 17¢ for 17 ounces and the final column is for foreign mail letter postage.

McGiehan along with Columbia Supply Co. also of 26 Corlandt St., New York were involved in the manufacture of package boxes for the U.S. Post Office. There were three separate indictments in 1903 for Isaac S. McGiehan and George H. Huntington for Conspiracy to Defraud the United States in connection with the purchase of package boxes and bribery. George H. Huntington was also one of the witnesses listed on McGiehan's postal scale patent.

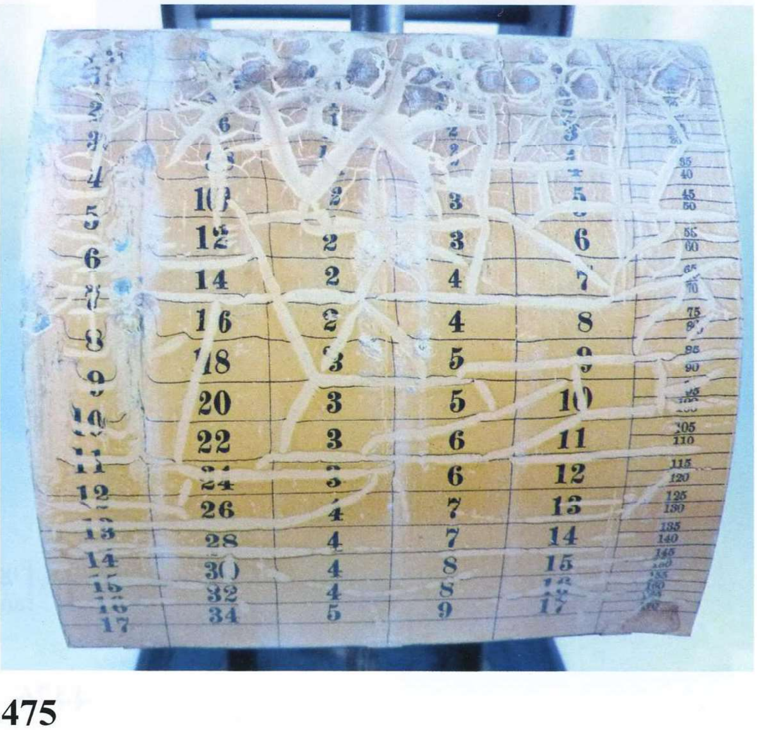


Figure 13. ➢➢ The scale chart is in poor condition.

Rikkers Airmail Letter Scale

BY ANDRÉ SOL

This Rikkers letter scale (Figure 1) is specially made for airmail, the word Airmail and a picture of an airplane accentuate this even more (Figure 2). At the back is the brand name Rikkers and in an oval RWA and the indication 25 (Figure 3). That 25 is the model number and at the same time also the weighing range. About the letters RWA, more later. There is also a more ordinary Rikkers letter scale with a weighing range of 100 grams, the Rikkers RWA 100.[1]

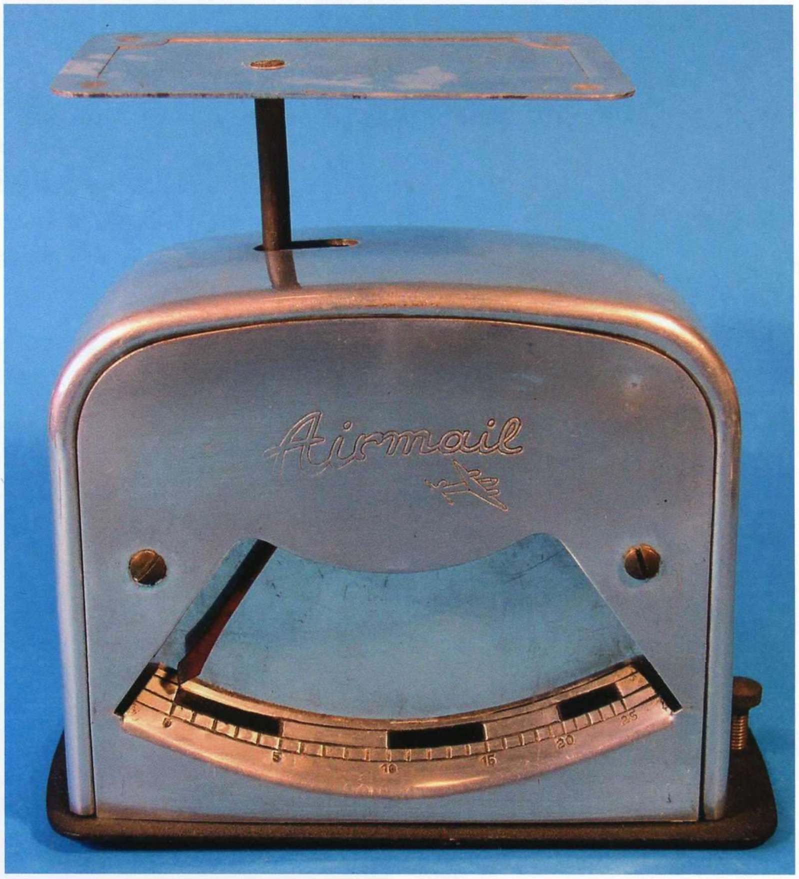


Figure 1. ▲▲ Rikkers Airmail Letter Scale.

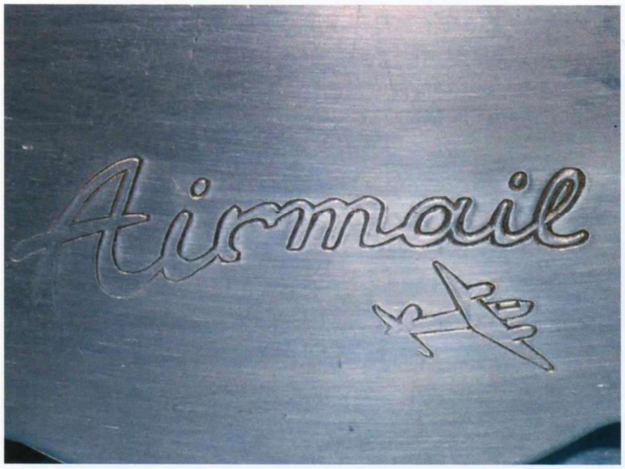


Figure 2. ▲▲ Airmail = Mail transported by airplane.

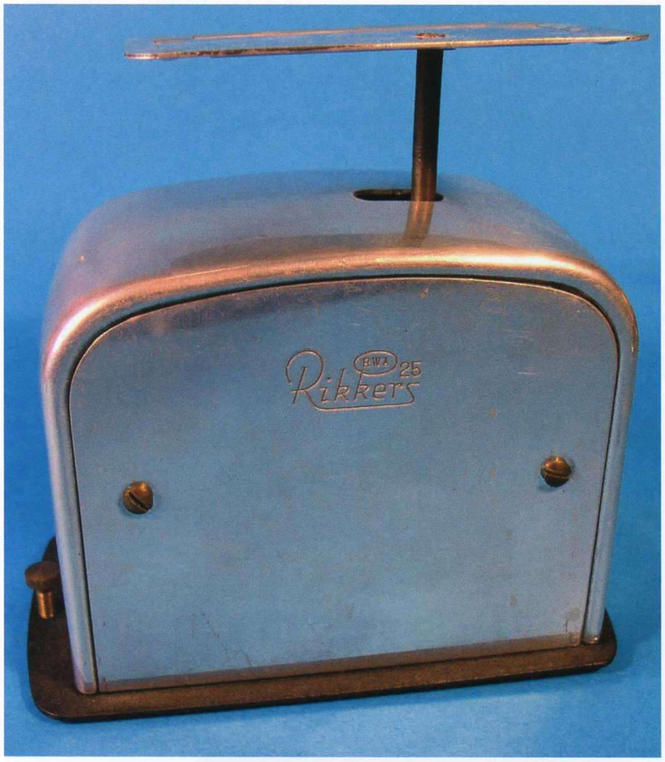


Figure 3. ◀◀ The brand name RIKKERS, indication weighing range 25 and the registered trademark R.W.A.

Gebroeders Rikkers (Rikkers Brothers) was once a firm based in Amsterdam. Old catalogs show that they also had branches in The Hague, Rotterdam and New York. It was a trading house focused on supplying leather goods and office supplies to other entrepreneurs, delivering engros (wholesale). Engros is a term no longer used for a wholesaler that sells exclusively to the retail trade, or stores, in larger quantities. On an old photo card (Figure 4) this text is displayed on the shop window:

MONSTERZALEN
der N.V. HANDELSVEREENIGING
Gebr. RIKKERS-AMSTERDAM
lederwaren & kantoorartikelen-engros
+RWA+

Translated:

SAMPLE ROOMS
of TRADE ASSOCIATION LTD CO.
Gebr. RIKKERS-AMSTERDAM
leather goods & office supplies – engros
+RWA+

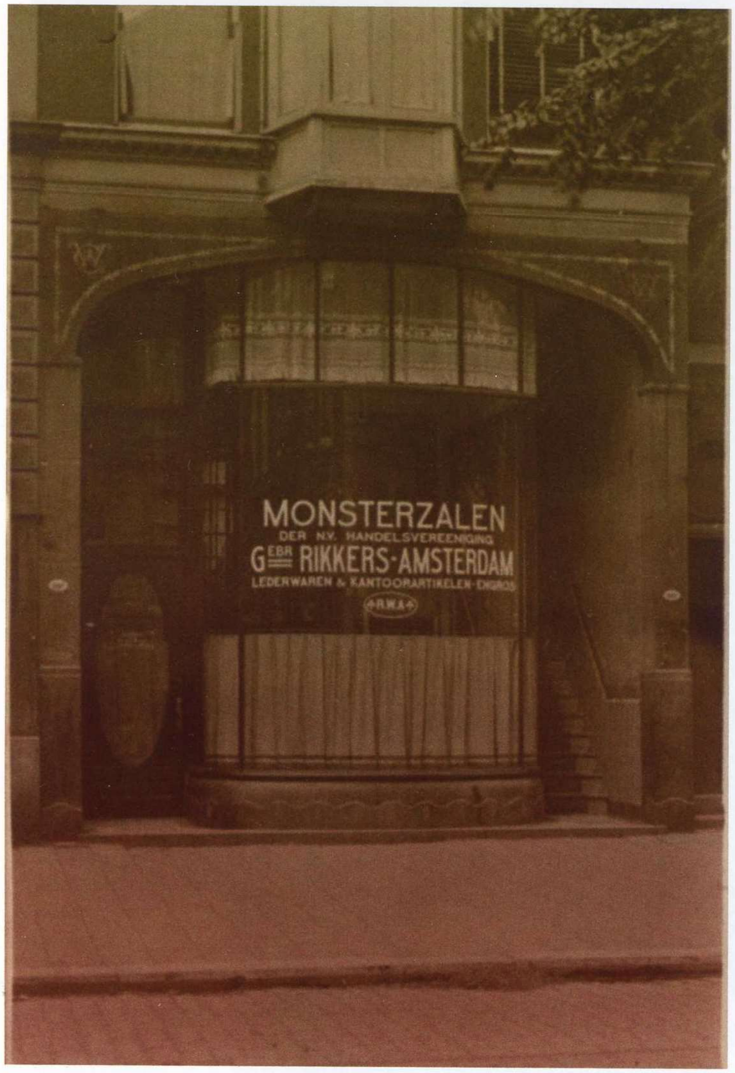

MONSTERZALEN
DER NV. HANDELSVEREENIGING
GEBR RIKKERS-AMSTERDAM
LEDERWAREN & KANTOORARTIKELEN-ENGROS
+R.W.A.+

Figure 4. ▲▲ Gebr. Rikkers on photo card of Oldenbarneveldtstraat 99b in Rotterdam before May 1940.

Postcard research on the site *search images in old postcards*[2] showed that this shop was located in Rotterdam at Van Oldenbarneveldtstraat 99b. The building was destroyed in the bombing in the beginning of the Second World War in May 1940.

It has only recently become known to me that Gebr. Rikkers started as early as 1881. I bought a 75 year silver anniversary jubilee spoon R.W.A. 1881-1956 (Figure 5).

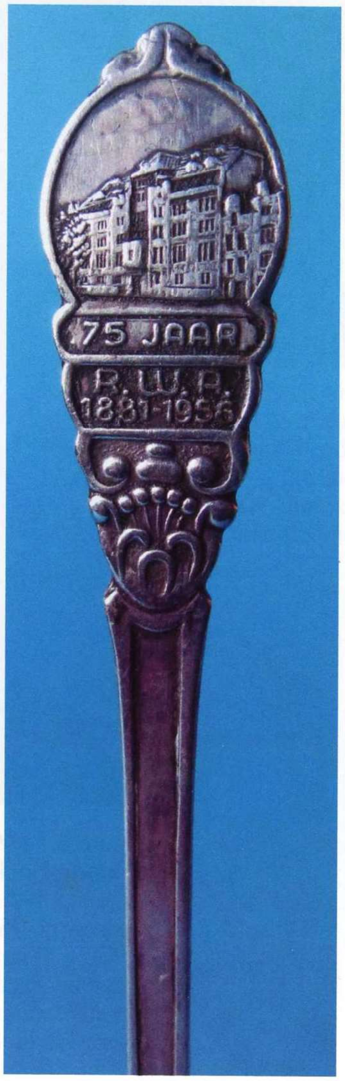
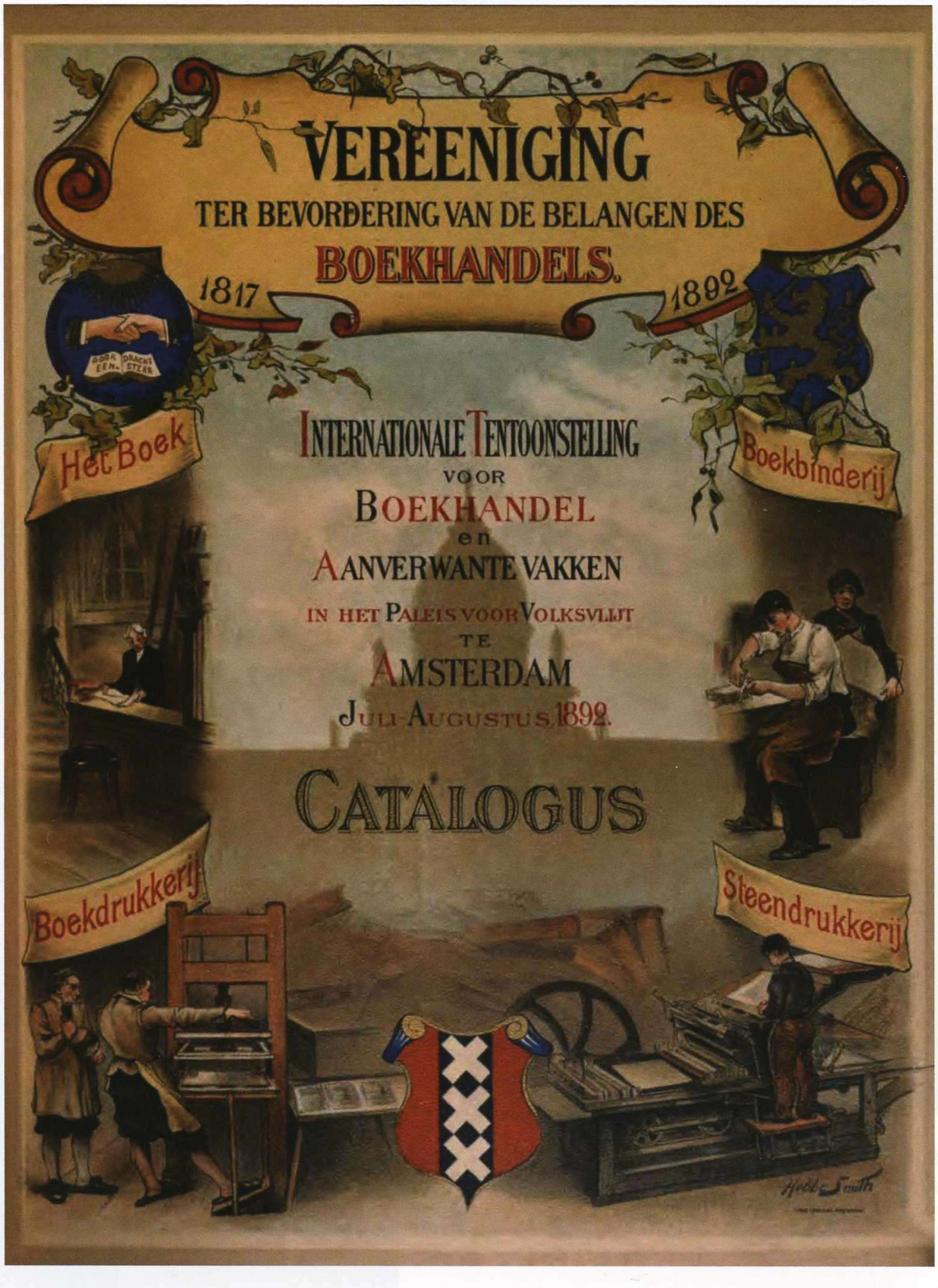


Figure 5. ➤➤ Silver anniversary jubilee spoon 75 years R.W.A. 1881-1956.

Earlier I found in a book from the year 1892 that Gebroeders Rikkers was already active at that time.[3] The relevant book is the catalog of the International Exhibition for Bookshop and Related Professions in the Paleis voor Volksvlijt in Amsterdam, July-August 1892, organized by the Association to promote the interests of Bookshops on the occasion of their 75th anniversary, 1817-1892, (Figure 6). Rikkers was at that time located on the Warmoesstraat 152-154 in Amsterdam. In the early 1960s, Rikkers was housed in a large seven-story building on Prinsengracht 612-622. Rikkers then switched to Rikkers, Blazer & Metz (RBM), later this was taken over again by Bührmann-Tetterode. This company later merged into Esveha.

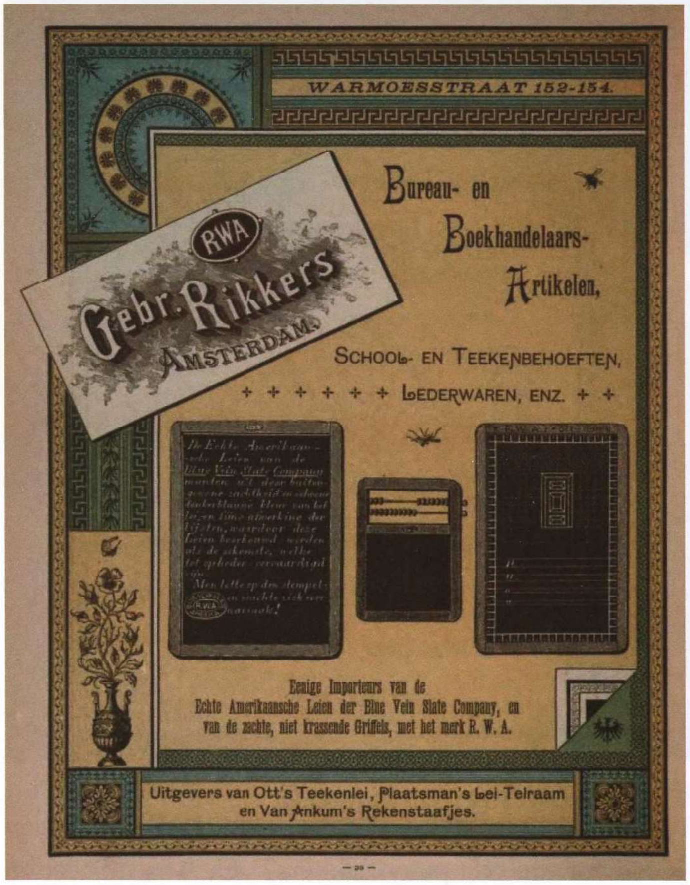

VEREENIGING
TER BEVORDERING VAN DE BELANGEN DES
BOEKHANDELS.
1817 1892

INTERNATIONALE TENTOONSTELLING
VOOR
BOEKHANDEL
en
AANVERWANTE VAKKEN
IN HET PALEIS VOOR VOLKSVLIJT
TE
AMSTERDAM
JULI-AUGUSTUS 1892.

CATALOGUS

Figure 6. ⩓⩓ A very beautiful inner page, in color, from the catalog of the International Exhibition for Bookshop and Related Professions in the Paleis voor Volksvlijt in Amsterdam, July-August 1892, by the Association to promote the interests of the Bookshops organized on the occasion of the 75th anniversary, 1817 -1892. The plate was made by Hobbe Smith, born December 7, 1862 in Witmarsum Friesland, the Netherlands, who worked first at a lithography in Amsterdam. Later he became a painter, attended training at the Rijks Academie voor Beeldende Kunsten in Amsterdam and at the Drawing Academy of Amsterdam as well as the Drawing Academy of Antwerp. He died in Amsterdam on May 1, 1942.

The letters R.W.A. are found on various products supplied by Rikkers as early as the 1892 catalog (Figure 7 & Figure 8). In the newspaper *Het Algemeen Handelsblad* of June 25, 1888, (Figure 9) it says that Gebr. Rikkers at the Registry of the District-Court filed a trademark consisting of an oval containing the letters R.W.A. and above it in curved text Blue Vein Slate and below it in curved text Amerika. The abbreviation R.W.A. is used with slates of the American Blue Vein Slate Company from America, slates from Germany, on the packaging of Robert chalk, and on various types of pens, for example, on the dip pens. In an advertisement for 'pencils' by Rikkers in the newspaper *Het Nieuws van de Dag* of December 20, 1911, *every pencil is marked with the name of our company or our registered trademark R.W.A.*


WARMOESSTRAAT 152-154.

RWA

Gebr. Rikkers

Amsterdam.

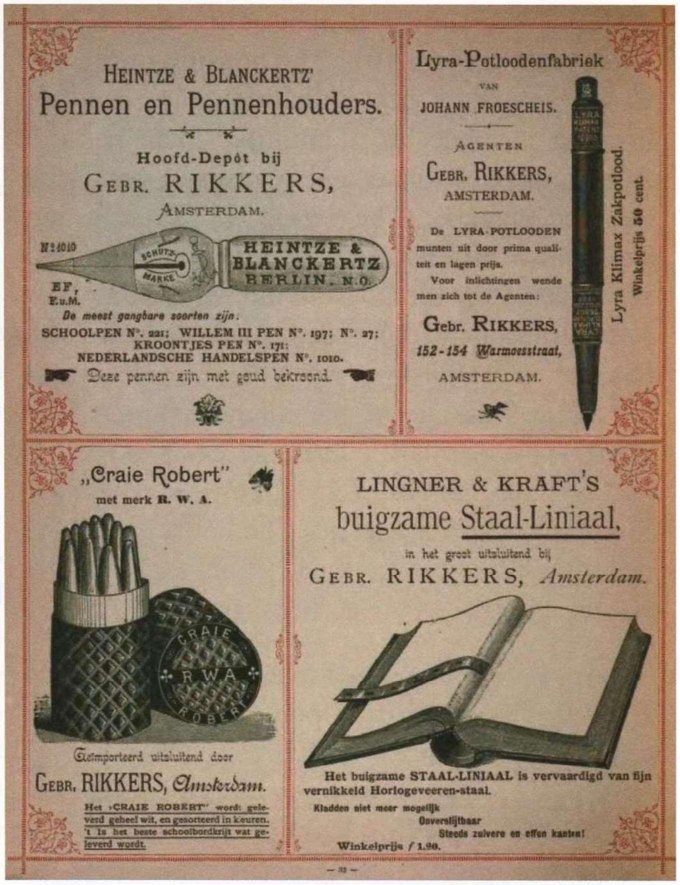
Bureau- en
Boekhandelaars-
Artikelen,

School- en Teekenbehoeften,
+ + + + + + Lederwaren, enz. + +

Eenige Importeurs van de
Echte Amerikaansche Leien der Blue Vein Slate Company, en
van de zachte, niet krassende Griffels, met het merk R. W. A.

Uitgevers van Ott's Teekenlei, Plaatsman's Lei-Telraam
en Van Ankum's Rekenstaafjes.

Figure 7. ⮝⮝ Page 30 of the 'advertisements'-part of the catalog of the International Exhibition 1892 Gebr. Rikkers Amsterdam R.W.A. present themselves as sole importers of Blue Vein Slate Company slates, and as publishers of Ott's tick-slate, of Plaatsman's slate abacus and of Van Ankum's calculating rods.


HEINTZE & BLANCKERTZ'
Pennen en Pennenhouders.

Hoofd-Depôt bij
GEBR. RIKKERS,
AMSTERDAM.

N° 1010
SCHUTZ-MARKE
HEINTZE & BLANCKERTZ BERLIN. N.O.
EF,
E.u.M.

De meest gangbare soorten zijn:
SCHOOLPEN N°. 221; WILLEM III PEN N°. 197; N°. 27;
KROONTJES PEN N°. 171;
NEDERLANDSCHE HANDELSPEN N°. 1010.
Deze pennen zijn met goud bekroond.

Lyra-Potloodenfabriek
VAN
JOHANN FROESCHEIS.

AGENTEN
GEBR. RIKKERS,
AMSTERDAM.

De LYRA-POTLOODEN munten uit door prima qualiteit en lagen prijs.
Voor inlichtingen wende men zich tot de Agenten:

Gebr. RIKKERS,
152-154 Warmoesstraat,
AMSTERDAM.

Lyra Klimax Zakpotlood.
Winkelprijs 50 cent.

„Craie Robert"
met merk R. W. A.

Geïmporteerd uitsluitend door
GEBR. RIKKERS, Amsterdam.

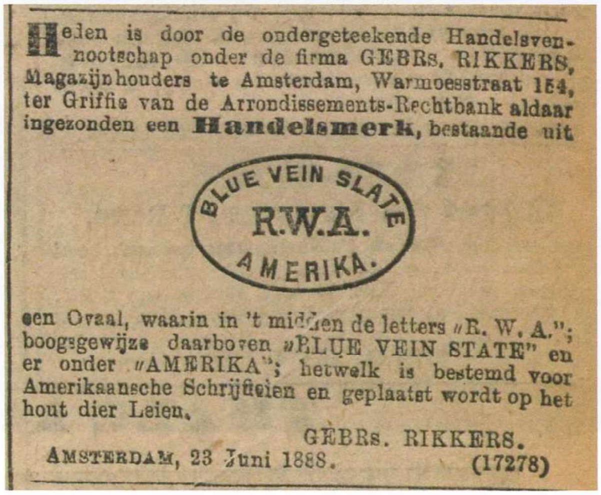
Het „CRAIE ROBERT" wordt geleverd geheel wit, en gesorteerd in keuren. 't Is het beste schoolbordkrijt wat geleverd wordt.

LINGNER & KRAFT'S
buigzame Staal-Liniaal,

in het groot uitsluitend bij
GEBR. RIKKERS, *Amsterdam.*

Het buigzame STAAL-LINIAAL is vervaardigd van fijn vernikkeld Horlogeveeren-staal.
Kladden niet meer mogelijk
Onverslijtbaar
Steeds zuivere en effen kanten!
Winkelprijs ƒ 1.90.

Figure 8. ⮝⮝ Page 32 of the 'advertisements'-part of the catalog of the International Exhibition 1892 entirely occupied by Gebr. Rikkers Amsterdam. They have the head-depot of Heintze & Blankertz' pens and pen holders, are the agents of Lyra pencils from Johann Froescheis, are the exclusive importers of 'Craie Robert' chalkboards and are the only importers of Lingner & Kraft's flexible steel.


Heden is door de ondergeteekende Handelsvennootschap onder de firma GEBRs. RIKKERS, Magazijnhouders te Amsterdam, Warmoesstraat 154, ter Griffie van de Arrondissements-Rechtbank aldaar ingezonden een **Handelsmerk**, bestaande uit

BLUE VEIN SLATE
R.W.A.
AMERIKA.

een Ovaal, waarin in 't midden de letters „R. W. A."; boogsgewijze daarboven „BLUE VEIN STATE" en er onder „AMERIKA"; hetwelk is bestemd voor Amerikaansche Schrijfleien en geplaatst wordt op het hout dier Leien.

GEBRs. RIKKERS.

AMSTERDAM, 23 Juni 1888. (17278)

Figure 9. ⮜⮜ Statement of the trademark registration of Blue Vein Slate R.W.A. Amerika, on June 23, 1888 in the newspaper *Het Algemeen Handelsblad* of June 25, 1888.

The registered trademark R.W.A. is also on the back of the Airmail letter scale shown here. At first I was not able to find the correct meaning of abbreviation R.W.A., for certain. Maybe it is **R**ikkers **W**aren **A**msterdam (the Dutch word Waren means Goods) or maybe **R**ikkers **W**armoesstraat **A**msterdam? The Benelux Trademark Office, when requested, reported they did not have any information about the expired trademark R.W.A. Only when a grandson of the founder of Gebr. Rikkers contacted me via my letter scale website in 2011, it was confirmed that the letters RWA stand for **R**ikkers **W**armoesstraat **A**msterdam.[4]

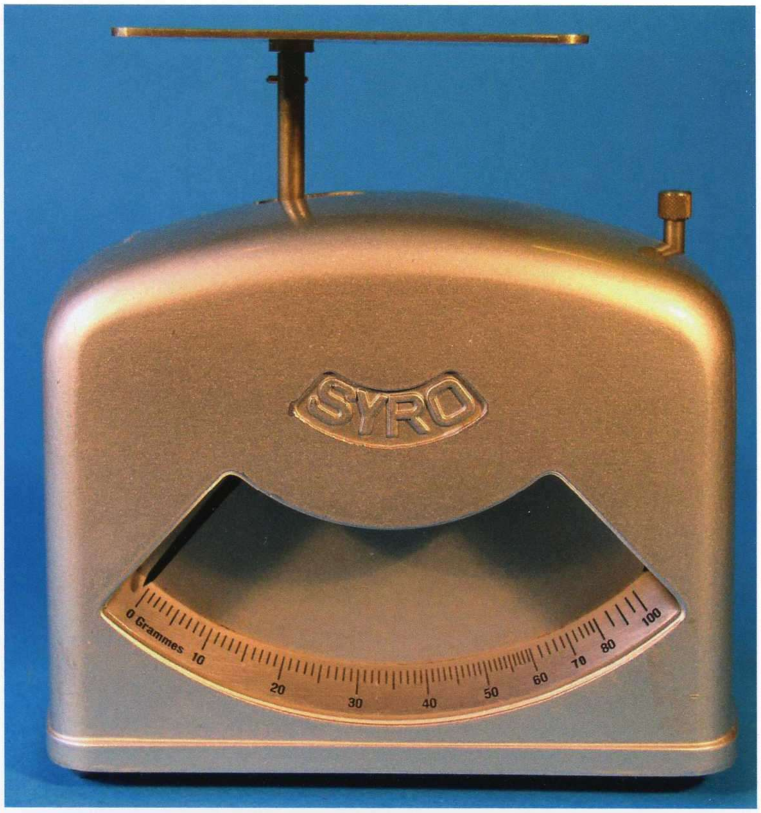


Figure 10. ⋀⋀ The Swiss Syro letter scale.

The shape of the housing of the Rikkers letter scale is very similar to that of the Swiss Syro letter scale (Figure 10). The housing of the Syro is one part of cast aluminum. The Rikkers housing is made up of multiple plate parts, a front and back plate and a pressed part with rounded shapes. The set-up of the adjusting screw also differs. On the Syro the adjusting screw is on top and goes all the way through the scale housing to the base. In the case of the Rikkers, the adjusting screw is located next to the scale housing in the slightly larger base plate. This Airmail letter scale has a very limited weighing range of 25 grams and a graduation mark for every gram. The housing and the weighing platform are made of aluminum. The screws and feet are made of brass.

The base plate is made of magnetic steel and has a black matt coating. Upon careful inspection of the bottom, I discovered under the black coating an embossed name: "ENERGIE" ST. OEDENRODE HOLLAND (Figure 11). Is this the name of the company where these scales were produced for the company Rikkers? Or was this letter scale once a business gift from a company called "ENERGIE"? I have asked co-collector Rein Kok in 2011 if his Rikkers copies also had "ENERGIE" ST. OEDENRODE HOLLAND at the bottom, but that was not the case.

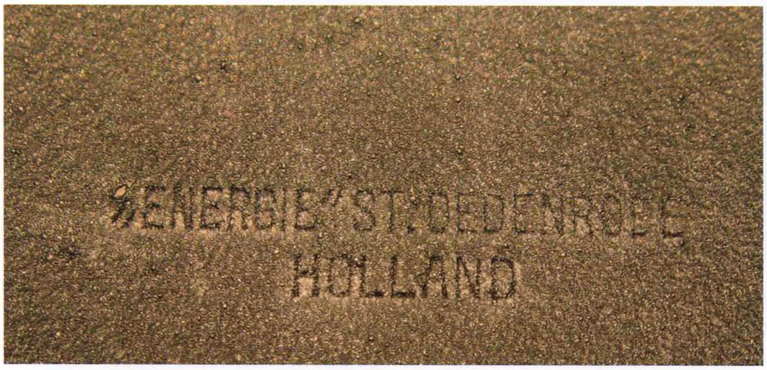


Figure 11. ⋀⋀ "ENERGIE" ST. OEDENRODE HOLLAND is poorly readable at the bottom of the base plate.

Then I contacted the municipality of Sint Oedenrode, in 2011, and asked about the existence of a company called Energie. I was referred to Mr. Tonnie Donkers, the secretary of the local antiquity association "De Heemkundige Kring De Oude Vrijheid". Tonnie turned out to be a very friendly and helpful man. He helped me with the following information:

Sint Oedenrode is called locally Rooy or Rooi. "Energie" appears to have been "Metaalwarenfabriek Energie" (translated: Metalware factory Energy).

The village historian, W. van Rooij, writes in his book *Sint Oedenrode het dorp van Mgr. Bekkers* (translated: *The Village of Monsignor Bekkers*) in 1968 on page 141 the following:

De metaalwarenfabriek Energie, die gevestigd was in de oude Nutricia-gebouwen aan de Markt, leek eerst de grote bedrijvigheid ten tijde dat Nutricia nog werkte te gaan evenaren, maar heeft de strijd tegen de concurrenten moeten opgeven.

Translated:

The Metalware factory Energy, *which was located in the old Nutricia buildings on the Market, first appeared to match the great activity at the time that Nutricia was still working there, but has had to give up the battle against the competitors.*

The factory was founded in about 1946 by Willem van Laar. He initially made hairpins in his garage and started to manufacture buckles, sheet metal trains and letter scales in the old Nutricia factory.

A son of the founder remembers that the factory burned down and later went bankrupt. Later, a restart was made under a different name, but the company burned down again in 1971, and then did not continue.

In 1948, a film was recorded in Sint Oedenrode on behalf of the Catholic Home Front with the title: *Roois Leven en Streven* (translated: *Roois Life and Striving*). The premiere was on August 29, 1948 in the Martinus home in Sint-Oedenrode. The entrance fee of 50 cents per person was for the benefit of the soldiers from Rooi active in the Dutch East Indies, now Indonesia.

In this film the factory gate of Energie Metaalwarenfabriek is shown in a fragment (Figure 12). Then there are images of die-cutting machines in action and then the big surprise: in a few short fragments, real images of a few employees busy with the assembly of Rikkers letter scales! The film was still available on DVD, unfortunately the pictures taken of it are of poor quality. A table full of mounted letter scales and two employees who check the letter scales with a weight can be seen in Figure 13 and Figure 14. The film can still be seen online at YouTube.[5]

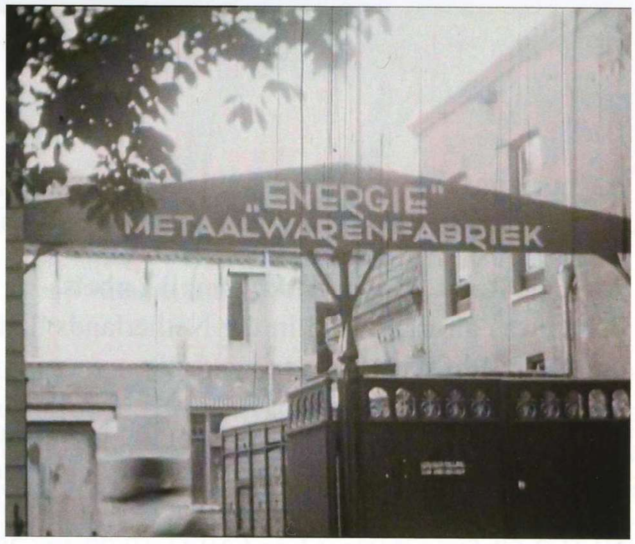


Figure 12. ⮝⮝ The iron gate of Energie Metaalwarenfabriek.

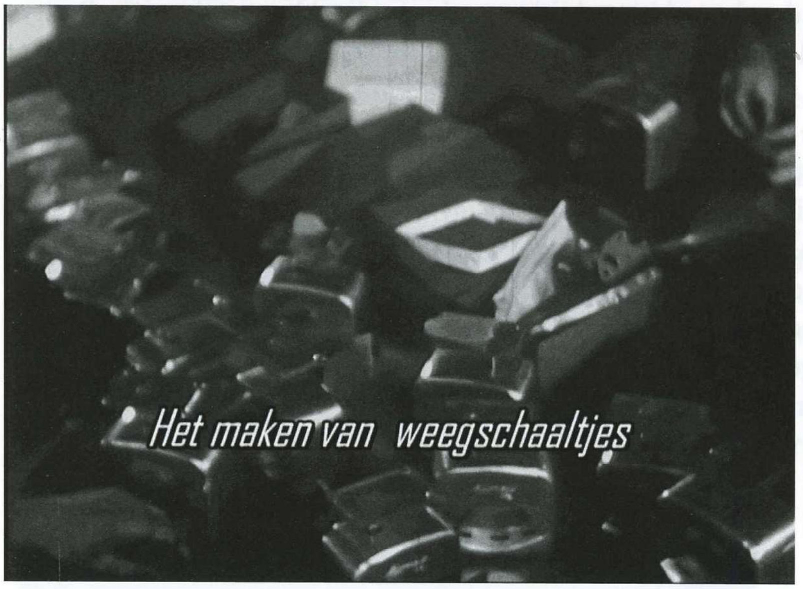


Figure 13. ≺≺ A table full of assembled letter scales with the projected text: Making scales (in Dutch: Het maken van weegschaaltjes).

Figure 14. ⮝⮝ Two employees checking a letter scale with a weight.

The film shows that in 1948 the (Airmail) Rikkers letter scale was made by Metaalwarenfabriek Energie in Sint-Oedenrode. The exact dates of manufacturing the scales remains unclear for the time being. It also remains unclear who, where, when and if others possibly also manufactured the Rikkers (Airmail) letter scales. After all, there are Rikkers letter scales without the name "ENERGIE" ST. OEDENRODE HOLLAND on the underside of the base plate, perhaps they were made somewhere else. It is also possible that the name was not always placed on the bottom plate and that all Rikkers letter scales were made at Metaalwarenfabriek Energie.

At the beginning of 2014, I tried to get in touch, on the internet, with owners of Rikkers catalogs to find out in which years the Rikkers letter scales were available. Unfortunately, that call did not have any response.

Airmail Rates, Taxes and Airmail Labels

When was air mail used in the Netherlands that would justify the purchase of a separate letter scale? That question is difficult to answer exactly.

The first transport of mail by air in the Netherlands took place on the London-Amsterdam route on May 17, 1920 with just one letter for the mayor of Amsterdam. The real first mail flight was on July 5, 1920 with a flight from Amsterdam to London.[6, 7, 8] During the first flights to the Dutch East Indies, an extra fee of NLG 2.50 for a postcard and NLG 10.00 for 20 grams for other items had to be paid on top of the normal postal tariff. The air fee was a surcharge that had to be paid in addition to the applicable postal tariff. Pretty quickly, in 1928, the air fee was sharply reduced to 40 cents per postcard and for other pieces to 75 cents per 20 grams. Later, a cheap rate of up to 5 grams was introduced. The introduction of special lightweight air mail paper weighing 30 grams or less per square meter helped to reduce the costs for the sender. There were sheets of airmail paper that could be folded and glued so that no separate envelope was needed, this also helped to keep the letter weight for the airmail low. (Figures 15, 16, & Figure 17). There has been an airmail rate for pieces up to 5 grams and from 5 to 10 grams for mail by air between the Netherlands and the Dutch East Indies. Postage weight limits of 5 and 10 grams require an accurate letter scale, an air mail scale like the Rikkers Airmail certainly makes sense.

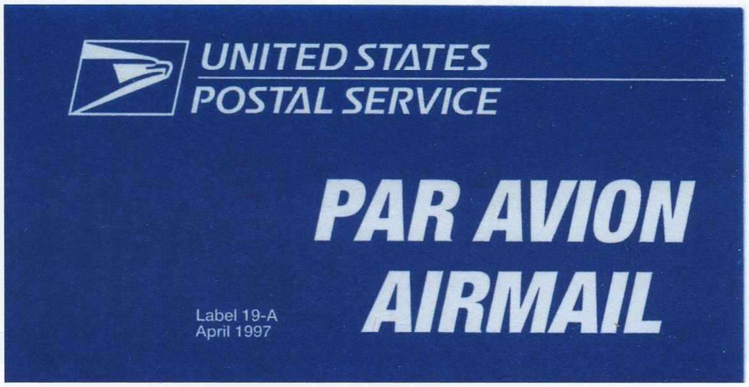


Figure 15. ➢➢ Airmail label from the American postal company USPS.

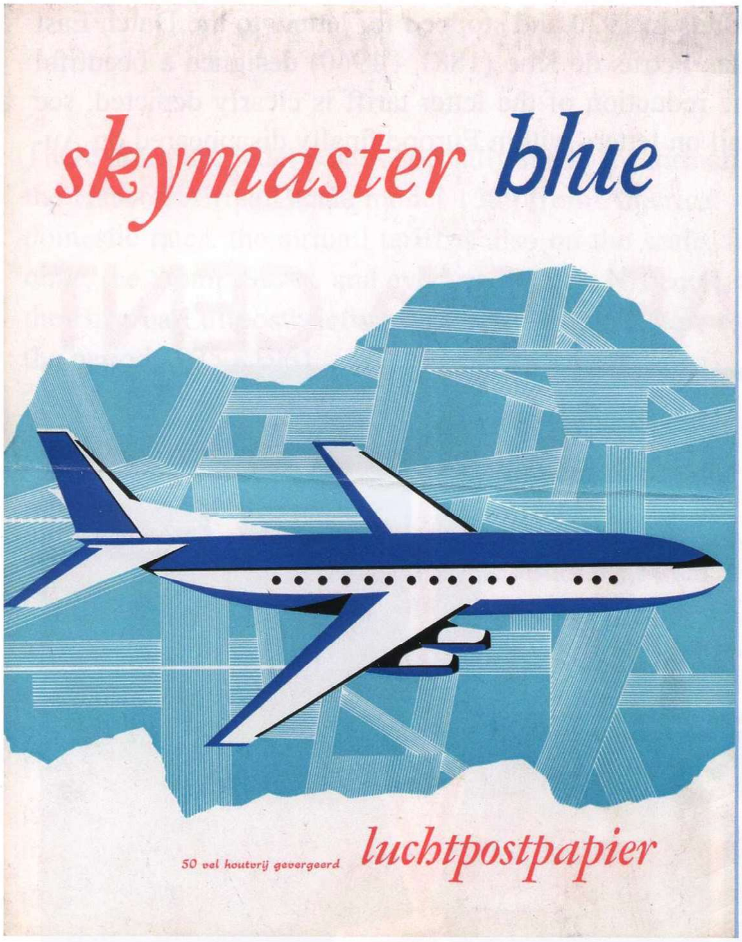


Figure 16. ▲▲ Writing bloc airmail paper Skymaster Blue.

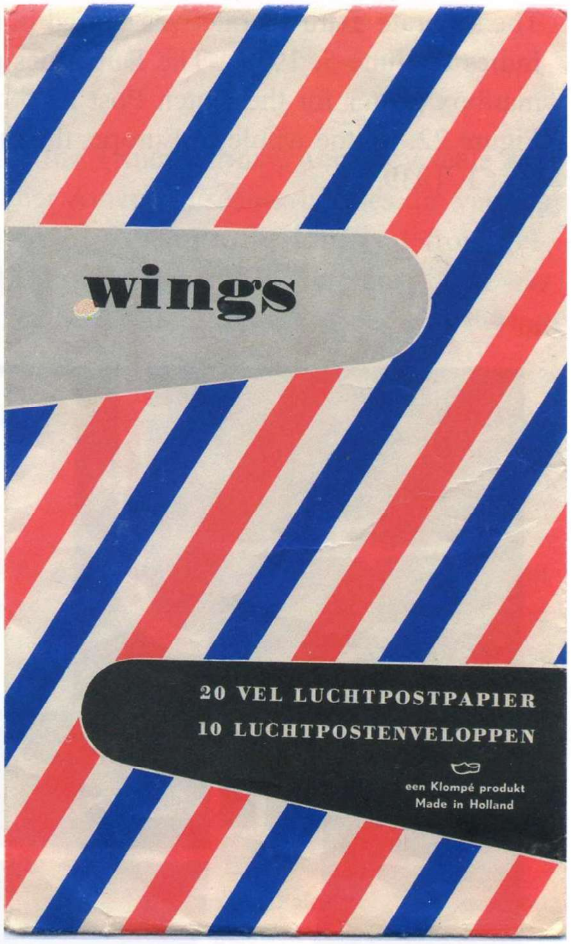


Figure 17. ▲▲ Packaging airmail paper and airmail envelopes of the brand Wings.

The airmail rate for many overseas countries is divided into the category Letters and (picture) postcards and the category Other items (printed matter, deeds, samples, etc.). In the early days of airmail, the rate limit applied to letters was 5 grams. The Other items category was subdivided in 0-20g, 20-50g and 50 grams or more. Later the weight limit rate for postcards and other items was determined by 10 grams. This latter air rate was also applied to newspapers and magazines. On June 5, 1937 the extra rate category for air mail to Dutch East Indies was abolished.[6, 7]

In the Netherlands, the sender must provide the envelope with the text PER LUCHTPOST (translated: BY AIRMAIL), this must be done in clear writing and underlined (preferably with a colored line) near the left corner, above the address. Later, in 1926 the airmail labels were introduced, first in yellow with black text. (Figure 18) In 1927 these labels became mandatory. In 1929 it was agreed internationally that air mail labels should be blue. Because the official language was French at the Universal Postal Union (UPU), there must always be 'Par Avion' on it. Figures 19, 20 and 21 are examples of air mail labels. Airmail labels are still used in many countries. The early labels were stickers with a layer of glue that had to be moistened. Nowadays the labels are self-adhesive and stick after removal of the protective layer.

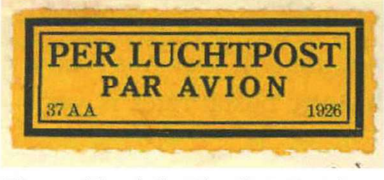


Figure 18. ▲▲ The first Dutch airmail label from 1926.

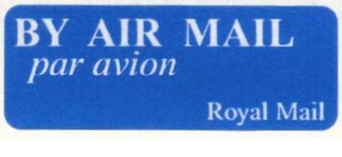


Figure 19. ▲▲ Airmail label Royal Mail England.

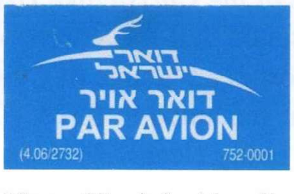


Figure 20. ▲▲ Airmail label Israel.

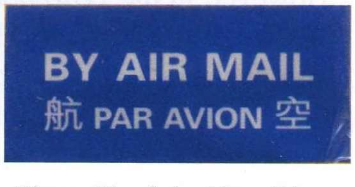


Figure 21. ▲▲ Airmail label Hong Kong.

The separate extra air rate was started in the Netherlands in 1920 and stopped for letters to the Dutch East Indies on June 5, 1937. The Dutch designer Nicolaas Petrus de Koo (1881 - 1960) designed a beautiful mailbox poster for the Dutch Post PTT on which the reduction of the letter tariff is clearly depicted, see Figure 22. In the whole of Europe, the rate for airmail on letters within Europe finally disappeared on August 1, 1939.

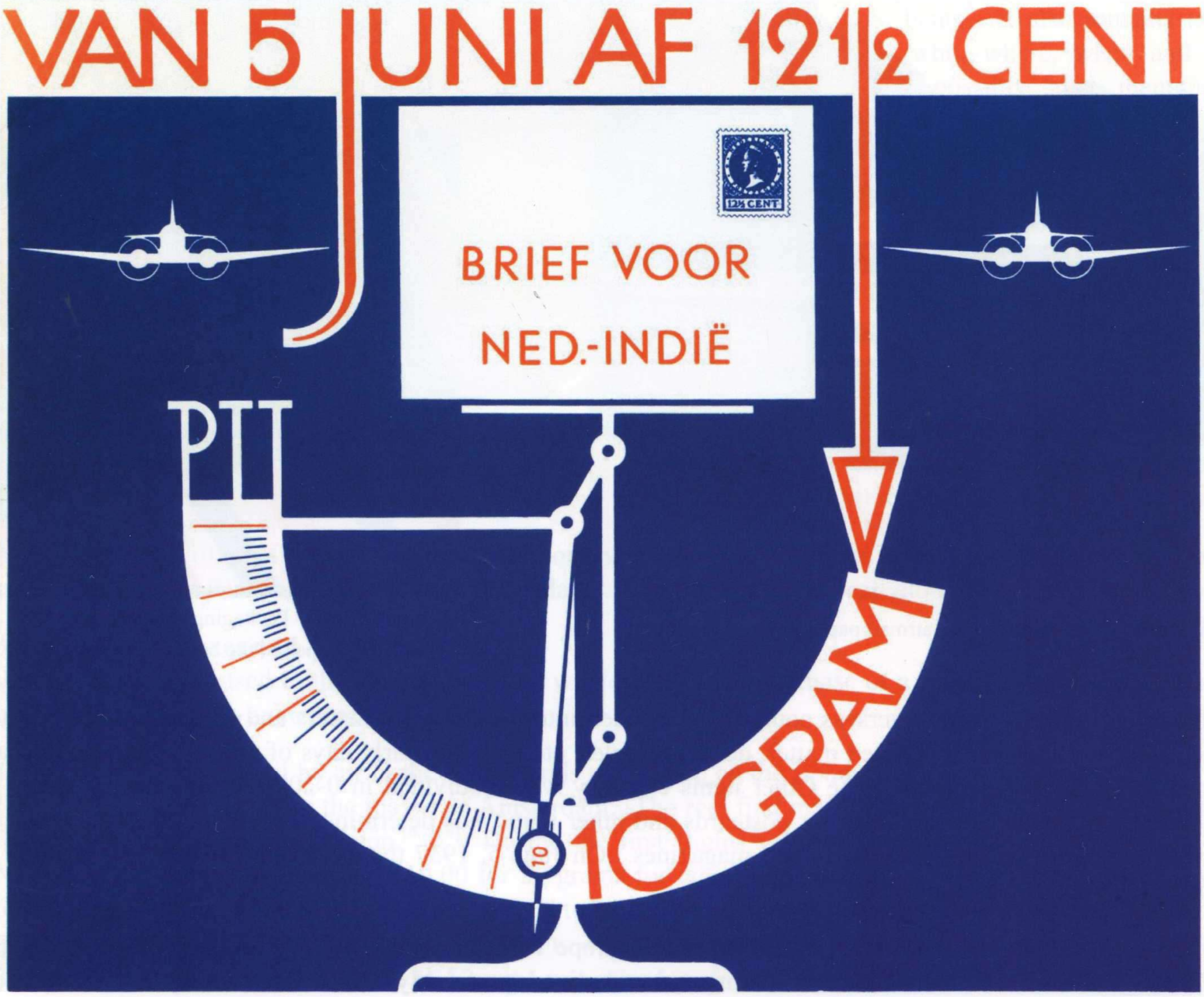


Figure 22. ⩓⩓ Mailbox poster about the reduced postal rate for letters to the Dutch East Indies, starting June 5, 1937 a letter up to 10 grams costs 12½ cents. This design was made by Nicolaas Petrus de Koo (1881-1960), a graphic designer, interior architect and industrial designer. He designed a lot for the PTT, that is the Dutch State Company of **P**ostal services, **Te**legraph and **T**elephony.

However, in the *Yearbook of the Christelijke Historische Unie* (a former political party in the Netherlands) Address List 1953[9] it is stated that for letters to Surinam and the Netherlands Antilles an extra Air Rate is still due above ordinary port per 5 grams of f 0.40 or f 0.35 respectively. I do not know if that was really the case or until when that remained in force. Detailed information about the historic postal rates is very difficult to find and rarely really clear.

There are more letter scales specially made for airmail, for example the Triner Airmail Accuracy scale and the Hanson Airmail scale model 1509 from America. On many other American scales, besides the various domestic rates, the airmail tariff is also on the scale, for example on the Rolamite, the Liberty 1 from Pelouze, the Stamp-Saver, and even on the Pen-N-Pencil, a letter scale in pen shape.[10] In Germany, there was the Bizerba Luftpostbriefwaage. In England, Salters released the Air Mail letter scale as model 11A during the period 1935 - 1961.

In conclusion: you know a bit more about the Rikkers Airmail letter scale and mail by air, but certainly not yet everything.

Note:

This article was first published in the Journal of the Dutch Society of collectors of Weights & Measures. In Dutch: *Meten & Wegen*. No. 181, March 2018, pp. 4320-4325. It was translated and slightly edited by the author.

Notes & References:

[1] Brievenwegers en aanverwante weegschalen, R.J. Kok, Meten & Wegen, December 1996, no. 96, pp. 2273-2279 (in Dutch)

[2] 'Zoekplaatjes in oude ansichten' at http://www.inoudeansichten.nl/zoekplaatjes/forum.php (in Dutch) translated: 'Image search in old postcards'

[3] Catalogus van de Internationale Tentoonstelling voor Boekhandel en Aanverwante Vakken in het Paleis voor Volksvlijt te Amsterdam, Juli-Augustus 1892, georganiseerd door de Vereeniging ter bevordering van de belangen des Boekhandels ter gelegenheid van het 75 jarig bestaan, 1817-1892 (te downloaden bijvoorbeeld via www.kobobooks.nl: of rechtstreeks op http://ia800306.us.archive.org/24/items/internationalet00goog/internationalet00goog.pdf (in Dutch)

Translated: Catalog of the International Exhibition for Bookshop and Related Subjects at the Paleis voor Volksvlijt in Amsterdam, July-August 1892, organized by the Association to promote the Interests of the Bookshops on the occasion of the 75th anniversary, 1817-1892 (can be downloaded for example via www.kobobooks.nl: or directly at http://ia800306.us.archive.org/24/items/internationalet00goog/internationalet00goog.pdf (in Dutch)

[4] Info by E-mail from Mr. William Rikkers, grandson of the founder, November 2011

[5] On YouTube at https://www.youtube.com/watch?v=L2ejQ8NTNA0 is the film "Roois Leven en Streven version 1". Drag the timeline to 13:57 in order to go directly to the images of the gate of Energie Metaalwarenfabriek. The letter scales are in view from 14:57 to 15:19

[6] Luchtpost veertig jaren KLM-postvluchten, Drs. J. Boesman, Uitgeverij C. de Boer Jr. Hilversum, 1959 (in Dutch)

[7] Postvluchten - Uit de geschiedenis van het luchtpostvervoer - luchtpostcatalogus van Nederland en overzeese rijksdelen, J. Boesman, Uitgeverij Davo N.V., Deventer, z.j. (in Dutch)

[8] Luchtvaart en Luchtpost encyclopedie deel 1 (tot en met 1935), J.L.C.M. TSchroots, H.H.C. TSchroots-Boer, uitg. De Nederlandse Vereniging van Aero-Philatelisten "De Vliegende Hollander", 1990, ISBN 9090035915 (in Dutch)

[9] Yearbook of Christelijke Historische Unie 1953 (with complete list of addresses and results of elections), main postal rates on pp. 8 – 11 (in Dutch)

[10] At my Letters Scales website http://members.casema.nl/a.a.m.sol/index-e.htm the American letter scales mentioned are shown and briefly described. (also available in Dutch)

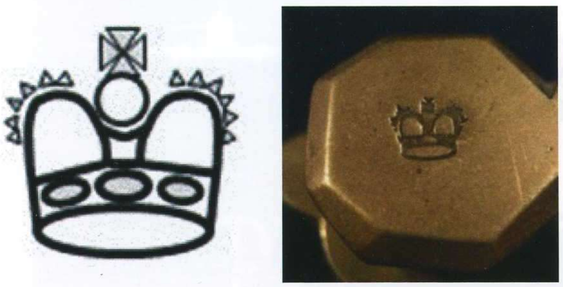
‘Mordan Style’ Sovereign Rockers

BY MIKE FOSTER

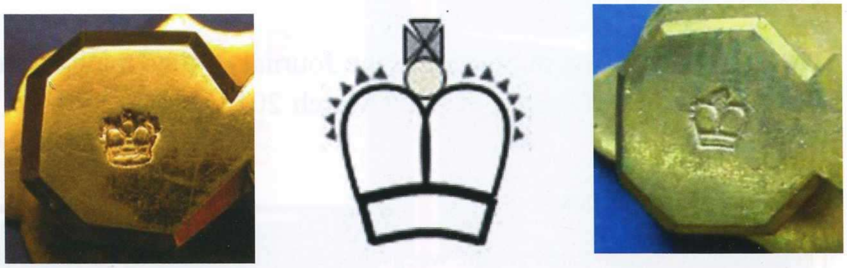
Who made a series of ‘Mordan Style’ Sovereign Rockers?

There is a series of rockers that generally share a base, poise, beam and platter style, but lack any form of ‘Name’ stamp. These are ‘heavier’ octagonal poise rockers, which the author has called ‘Mordan Style’ for lack of a better description. These rockers for the most part, except for variants 1, 2, and now 8 also lack any maker mark or crown stamp and notably all lack bushes.

On variant 1 & 2 are found two crowns, D47 and D48 that currently have no maker associated with them, but this could change. The two crowns could represent either different makers who perhaps were contracted to make these sovereign rockers for retailers or perhaps different manufactory locations operated by the maker?



D47: Possible Mordan & Co?



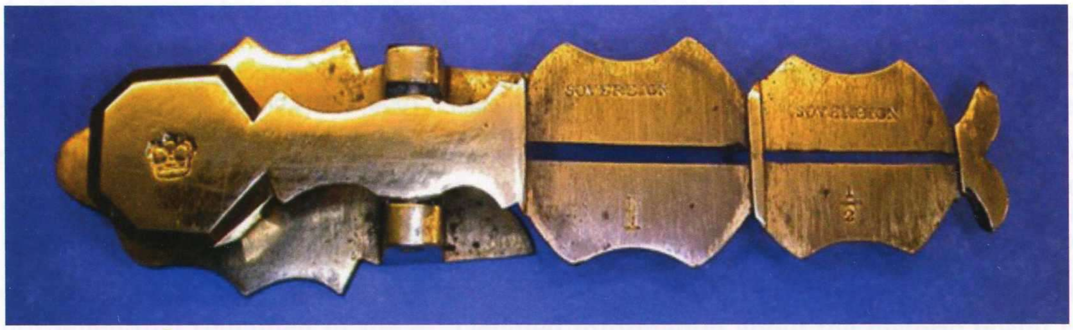
D48: Possible Mordan & Co?

The lack of maker marks and any form of ‘Name’ stamp implies that the rockers were most likely made for retailers. The retailer could sell the rocker in their own “Shop box” typically with labelling that identified the retailer’s name and provided information about his trade/occupation and of course the shop location, with street and town or city information.

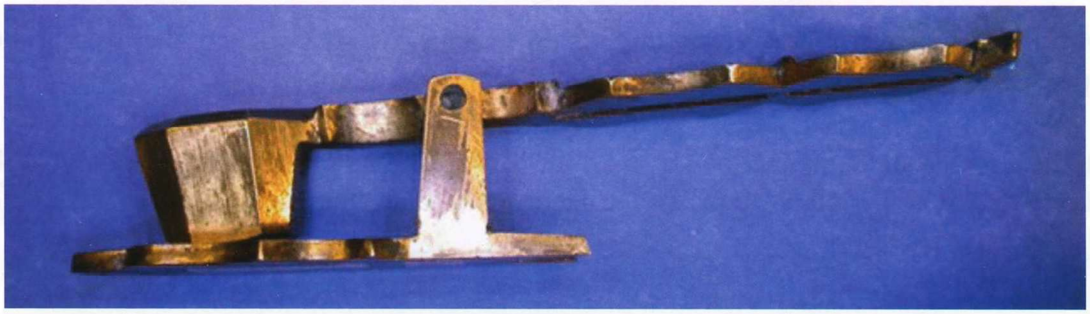
The variety of platter labelling styles further implies that the series was made by several different makers. One of the ways rocker makers distinguished their product was with different platter labelling styles that the users could identify.

As will be seen by looking at the following variants, this series exhibits a wide variety of platter labelling styles with distinguishing characteristics that could possibly link some of the variants to known makers.

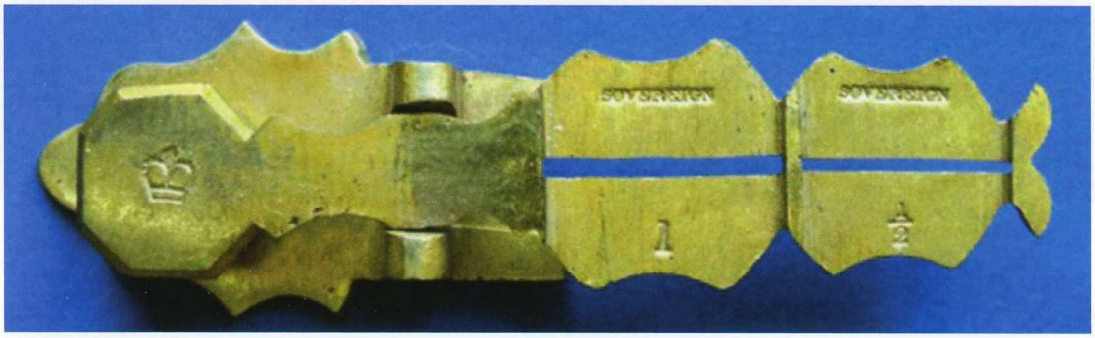
Variant 1 ‘Mordan Style’ has a D47 crown on the poise and small straight line ‘SOVEREIGN’ on top and ‘1’ and ‘1/2’ below on the platters.



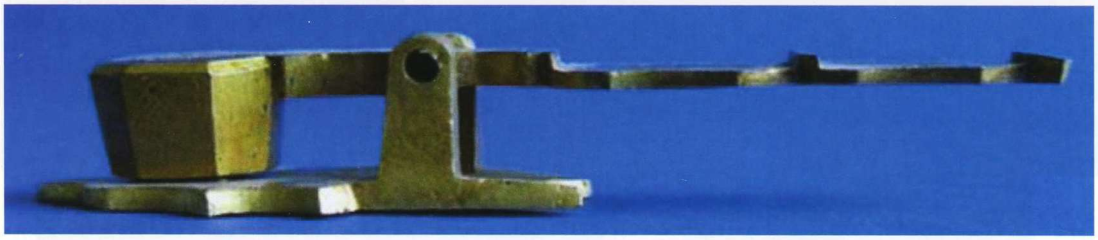
Variant 1: ‘Mordan Style’ - S. Mordan & Co.?



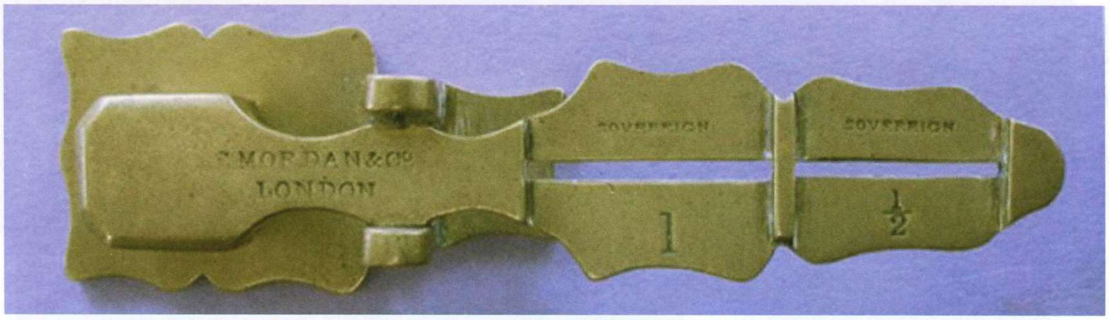
Variant 2 'Mordan Style' is very similar to Variant 1 except for a D48 crown on poise.



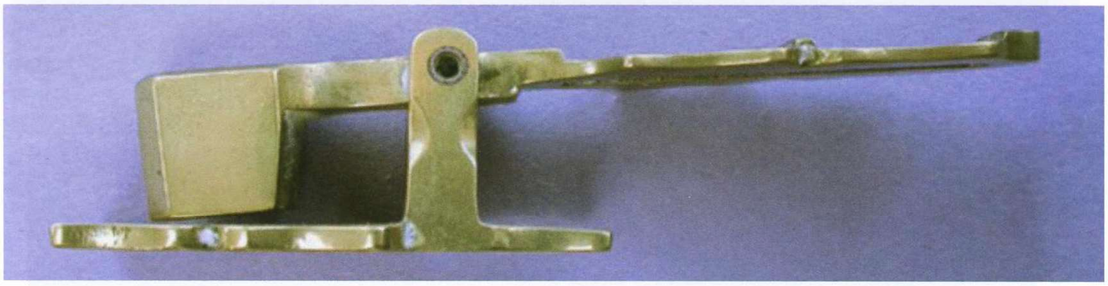
Variant 2: 'Mordan Style' - S. Mordan & Co.?



Variants 1 & 2 with the maker mark crowns have the distinctive small straight line 'SOVEREIGN' stamp on the top of the platters that is identical to the stamp found on the 'S. MORDAN & C$^{o.}$ / LONDON' Variant 4 and potentially links these variants to Sampson Mordan & Co. (known dates 1827-1941).



'S. MORDAN & Co. / LONDON' Variant 4

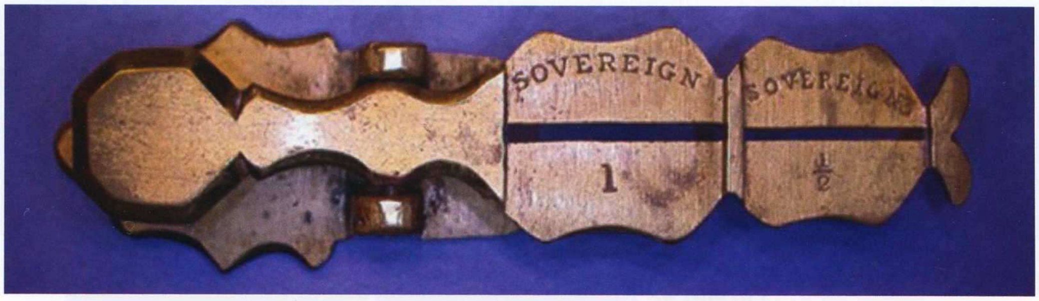


Perhaps Variants 1 & 2 represent a lower cost un-Bush'd series of Mordan rockers that sold at the same time as the more expensive Bush'd and 'S. MORDAN & C$^{o.}$ / LONDON' stamped rockers?

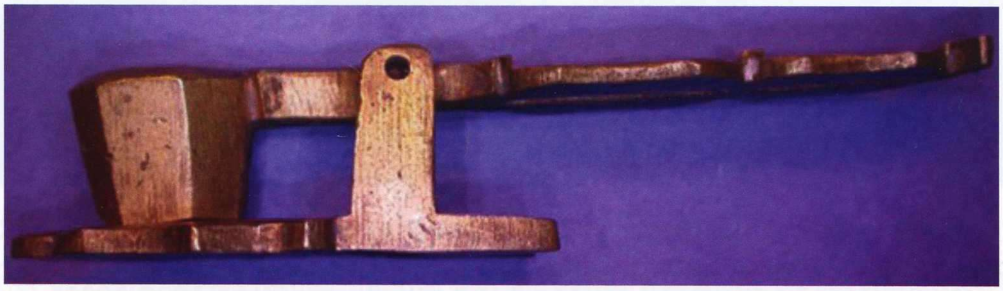
Mordan operated several workshops in London over the years and the crown stamps, D47 & D48, could be Mordan identifying different manufactory locations. The crown mark being a smaller label than the "S. MORDAN & Co. / LONDON' stamp.

Several 'Mordan Style' rockers without any form of maker identification follow.

Variant 3 'Mordan Style' has a downward curved large 'SOVEREIGN' and medium 'SOVEREIGN' on top, and '1' and '1/2' below on the platters.

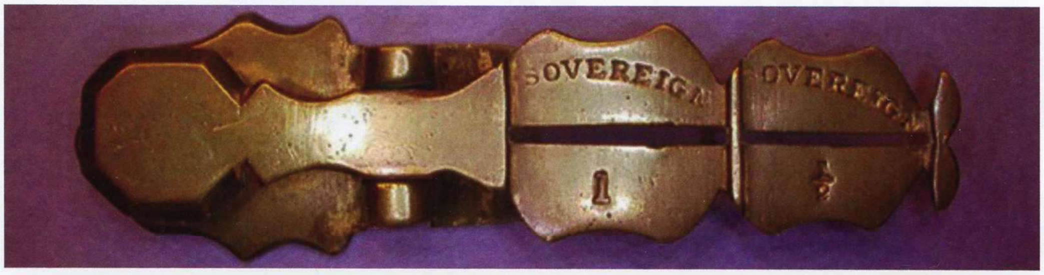


Variant 3: 'Mordan Style'

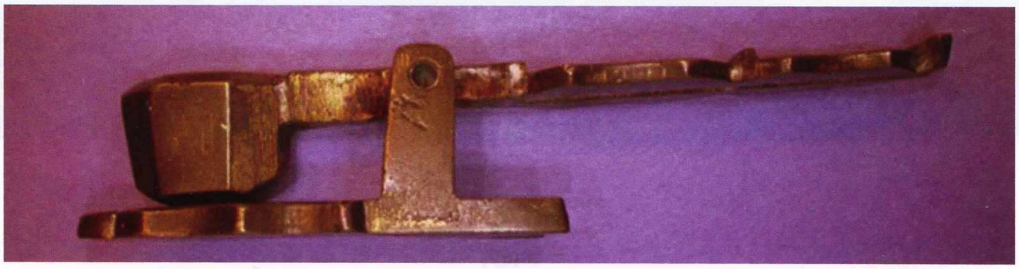


Note: This rocker variant was found in a W.R. Loftus labelled Shop box, from 320 Oxford St, London, known dates 1882-89 at that address. William Robert Loftus, London, manufacturer of instruments & machines for the wine, spirits & brewing trades, inventor and possible retailer of 'Mordan Style' rockers?

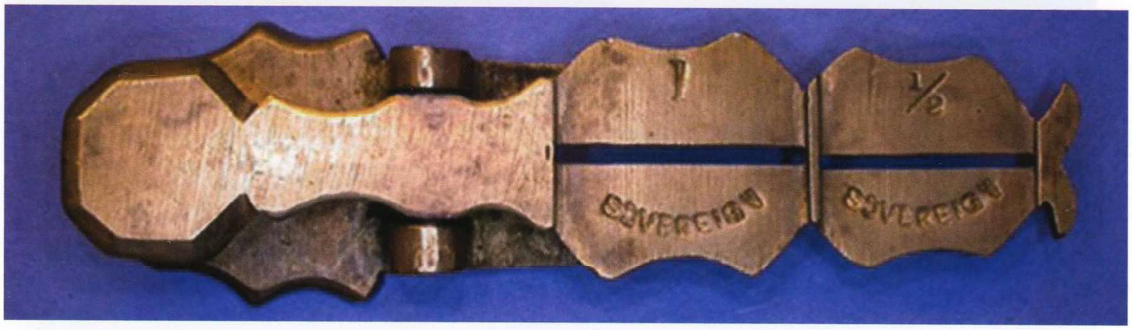
Variant 4 'Mordan Style' has a slanted downward curved large 'SOVEREIGN' on top and '1' and '1/2' below on the platters.



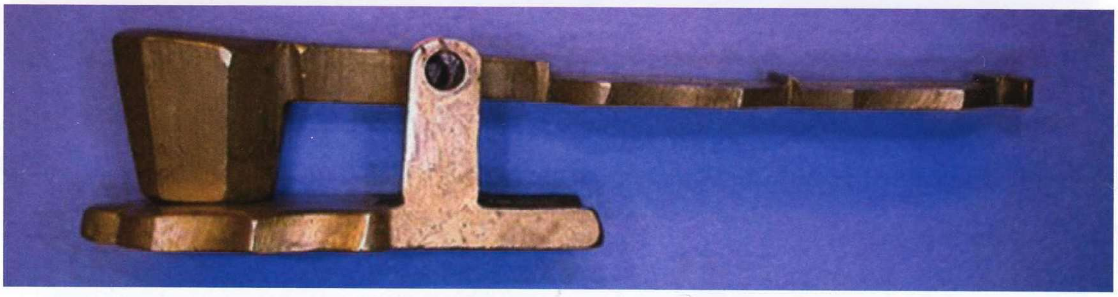
Variant 4: 'Mordan Style'



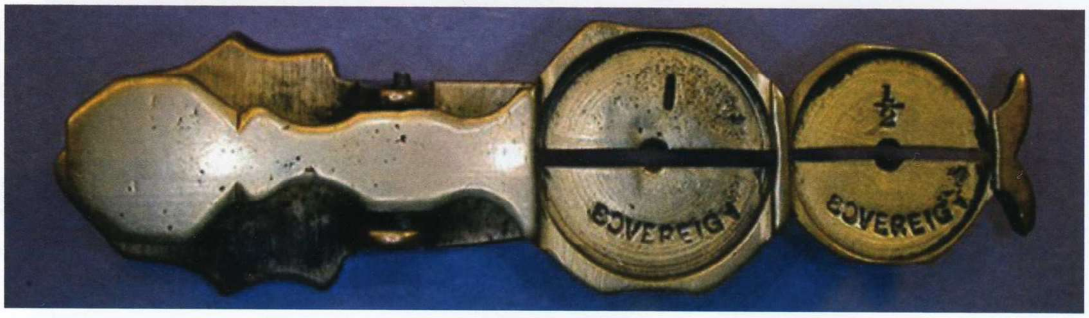
Variant 5 'Mordan Style' has an upward curved medium 'SOVEREIGN' below and '1' and '1/2' now on top of the platters. Note the different "½" style.



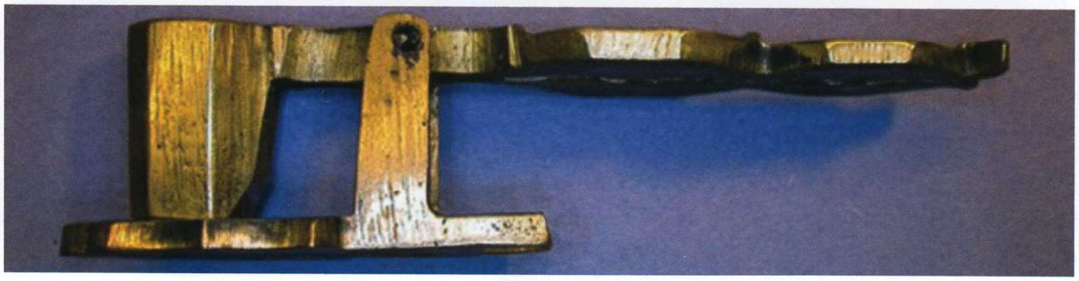
Variant 5: 'Mordan Style' - J. Stone?



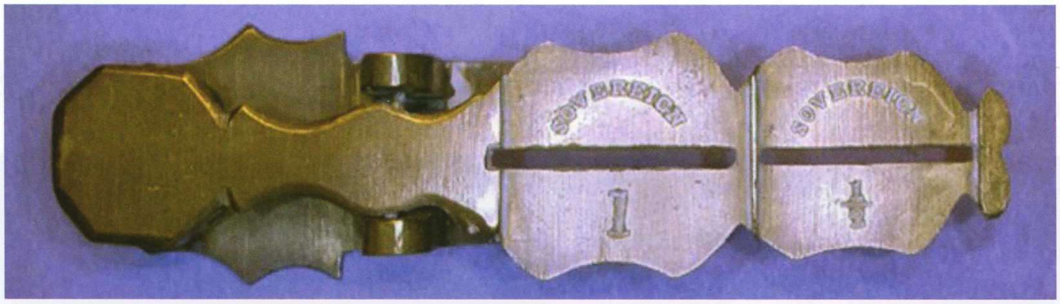
An identical upward curved medium 'SOVEREIGN' platter mark is found on J. Stone of London rockers (known dates 1820-25).



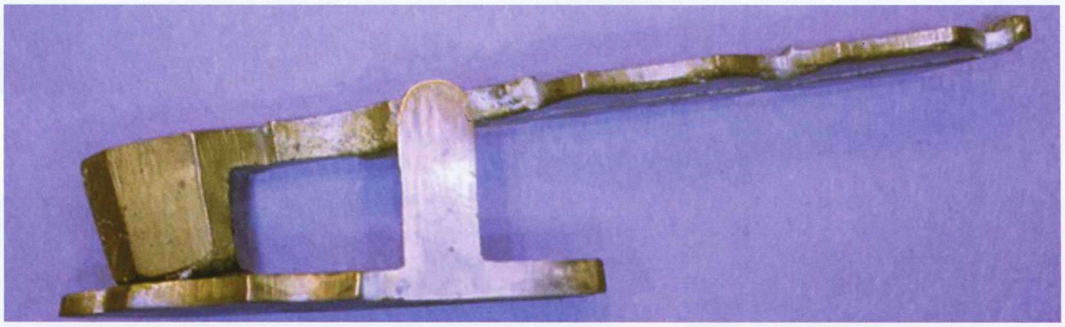
J. Stone Variant 2



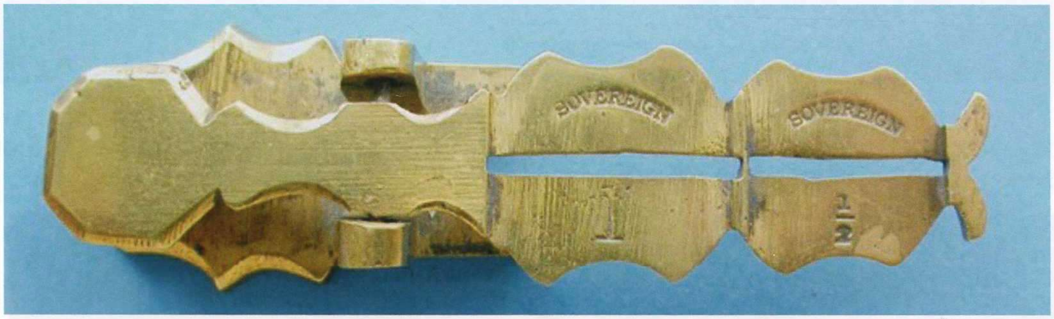
Variant 6 'Mordan Style' has a downward curved medium 'SOVEREIGN' on top and '1' and '1/2' below.



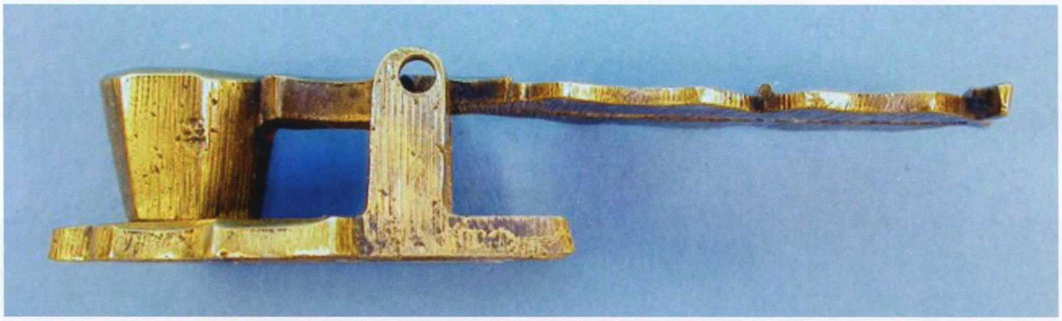
Variant 6: 'Mordan Style' - J. Stone?



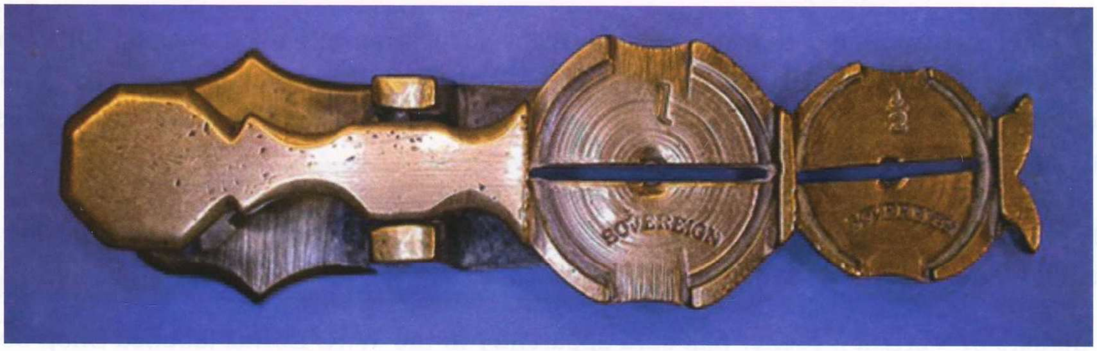
Variant 7 'Mordan Style' has the tight downward curved small 'SOVEREIGN' on top and '1' and '1/2' below.



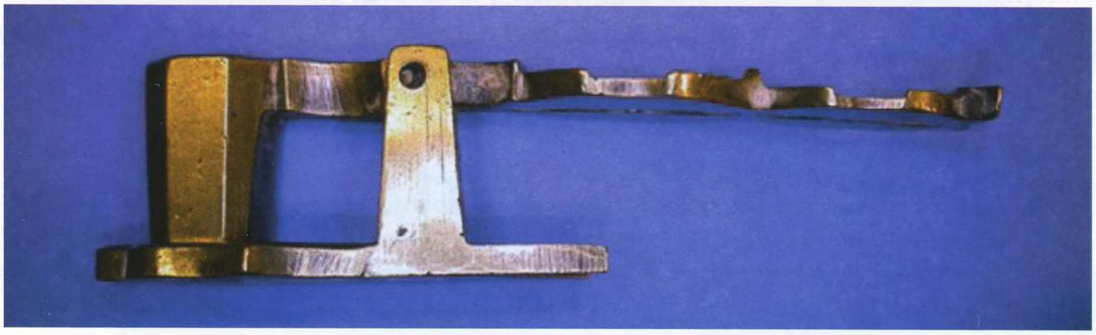
Variant 7: 'Mordan Style' - J. Stone?



The tight downward curve small 'SOVEREIGN' platter mark is found on another J. Stone of London rocker. This is one of his octagonal poise rockers, but the downward curve small 'SOVEREIGN' is on the bottom of the platter and the '1' and '1/2' are on the top.



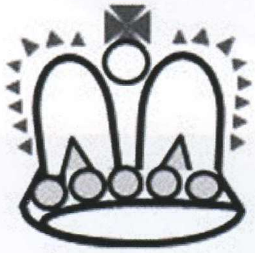
J. Stone Variant 1



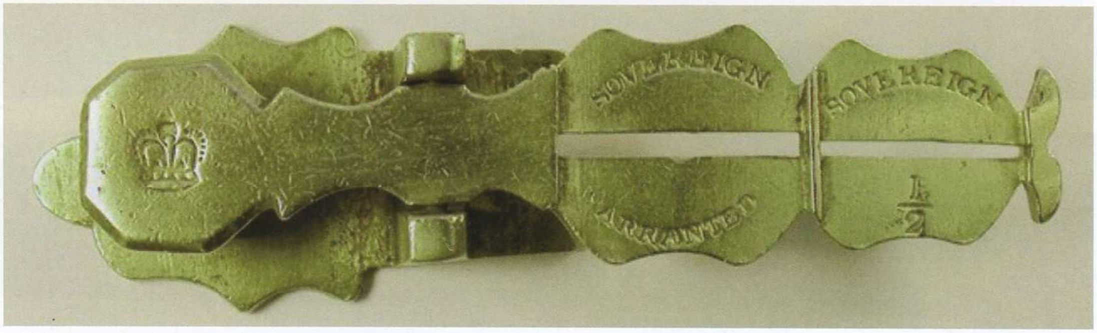
Perhaps variants 5 to 7 were rimless 'Mordan Style' rockers made by John Stone in addition to his rimmed platter offerings?

A new 'Mordan Style' rocker has recently come on the market, which raises some interesting questions about their origin. Variant 8 which is similar to Variants 3 & 4, has the Bourn Lionel Street, Birmingham foundry maker mark crown, D6 on the Octagonal poise and yet another style of platter labelling.

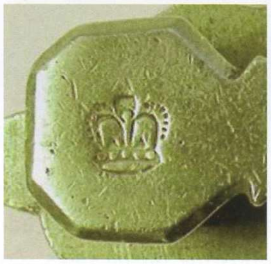
Variant 8 'Mordan Style' has a downward curved large 'SOVEREIGN' and medium 'SOVEREIGN' on top, and an upward curved large 'WARRANTED' and large '1/2' below on the platters.

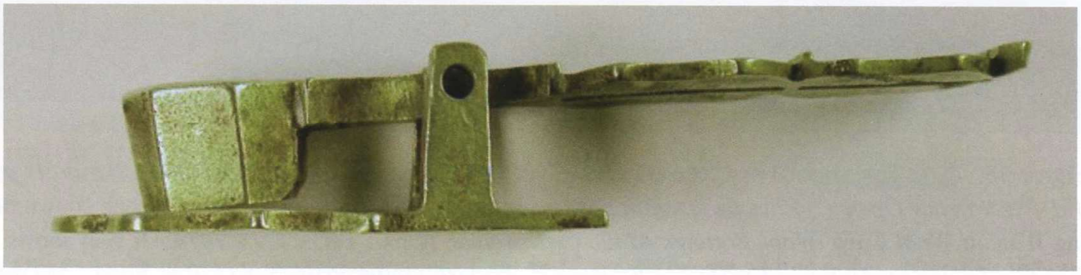


D6: Bourn 31 Lionel St. Foundry



Variant 8: 'Mordan Style' – Bourn 31 Lionel St foundry





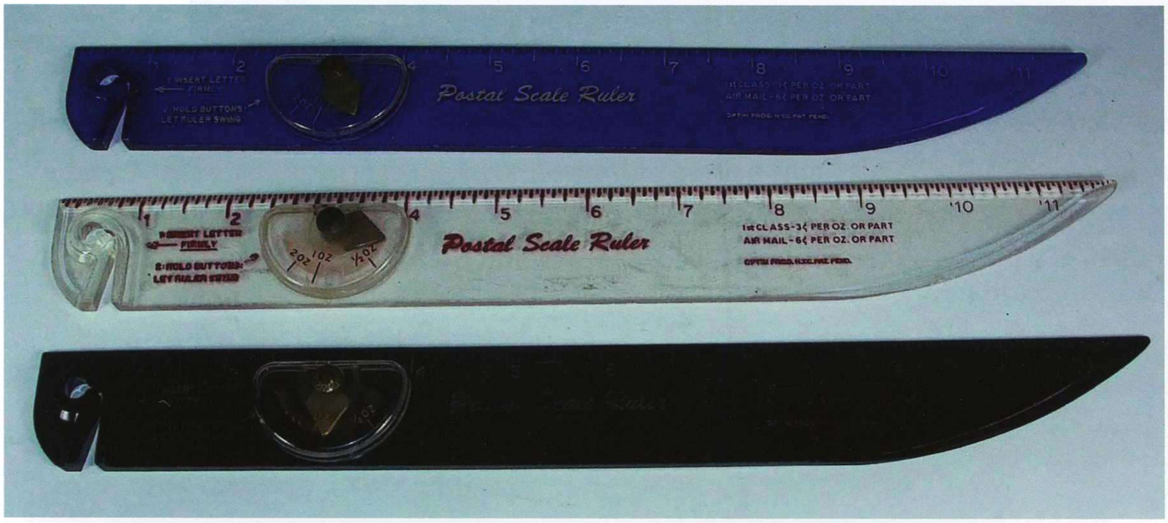
The Bourn 31 Lionel Street foundry crown was used by the succession of named owners: John Bourn (known dates 1818-50), W.W. Norton & Co. (known dates 1852-54), Norton & Co, (known dates 1855-58), Norton & Palk (known dates 1858-62) and Palk & Norton (known dates 1866-69); any of whom could have introduced and made this Variant 7.

The Lionel St. Foundry made rockers for retailers like Hyam Hyams and could have made some of the variants with different platter labelling for different retailers.

However, the makers of Variant 3 rocker that sold apparently in the W.R. Loftus labelled Shop box, from 320 Oxford St, London, known dates 1882-89 and the Variant 4 rocker are still unknown. Until more examples or new information becomes known on this rocker style, the readers will have to draw their own conclusions.

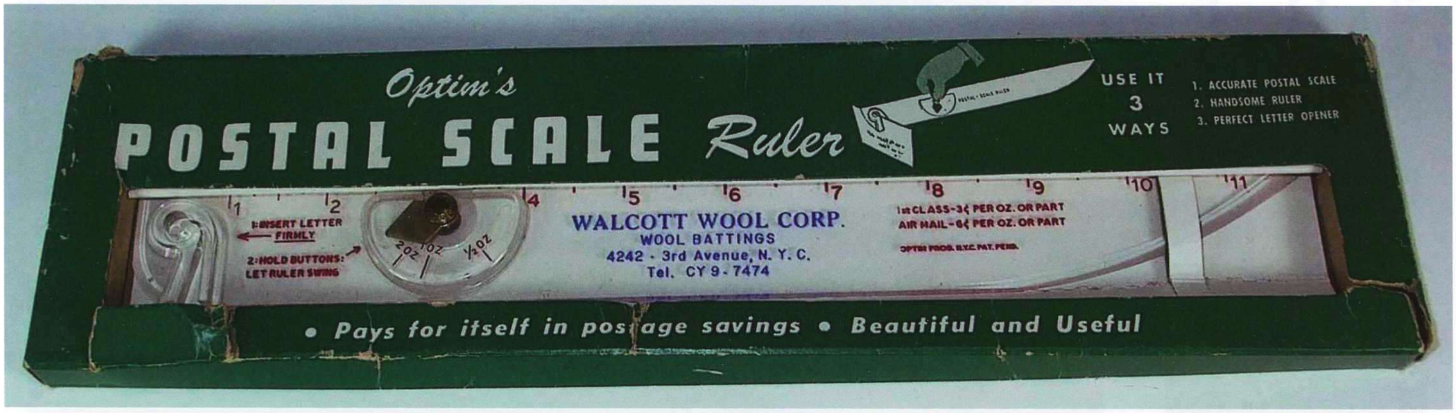
Letter Opener Scales, Part 3

BY JAN BERNING



Postal Scale Ruler
1: INSERT LETTER FIRMLY
2: HOLD BUTTONS LET RULER SWING
1st CLASS-3¢ PER OZ. OR PART
AIR MAIL-6¢ PER OZ. OR PART
OPTIM PROD. N.Y.C. PAT. PEND.
2oz
1oz
½oz

Figure 37. << The Postal scale ruler was introduced in *The Rotarian* of November 1950. It has been found in blue, clear and black plastic. Directions read: 1. *Insert Letter firmly 2. Hold button let ruler swing.*



Optim's
POSTAL SCALE Ruler
USE IT 3 WAYS
1. ACCURATE POSTAL SCALE
2. HANDSOME RULER
3. PERFECT LETTER OPENER
1: INSERT LETTER FIRMLY
2: HOLD BUTTONS: LET RULER SWING
WALCOTT WOOL CORP.
WOOL BATTINGS
4242 - 3rd Avenue, N. Y. C.
Tel. CY 9 - 7474
1st CLASS-3¢ PER OZ. OR PART
AIR MAIL-6¢ PER OZ. OR PART
OPTIM PROD. N.Y.C. PAT. PEND.
2oz
1oz
½oz
• Pays for itself in postage savings • Beautiful and Useful

Figure 38. ^^ The original box reads *Optim's Postal Scale Ruler. Use it three ways 1. Accurate postal Scale 2. Handsome Ruler 3. Perfect Letter Opener. Pays for itself in postage savings. Beautiful and useful*. The one shown here has an advertisement reading *Walcott Wool Corp. Wool Battings 4242—3rd Avenue, N.Y.C. Tel. CY 9 - 7474.* It also shows the following postal rates: *1st Class - 3¢ per oz. or Part, Air Mail - 6¢ Per Oz. or part, Optim Pros. N.Y.C. Pat. Pend.* No patent has been found, but these scales were introduced in *The Rotarian* Magazine in Nov. 1950. The dial is marked for ½, 1 and 2 ounces.

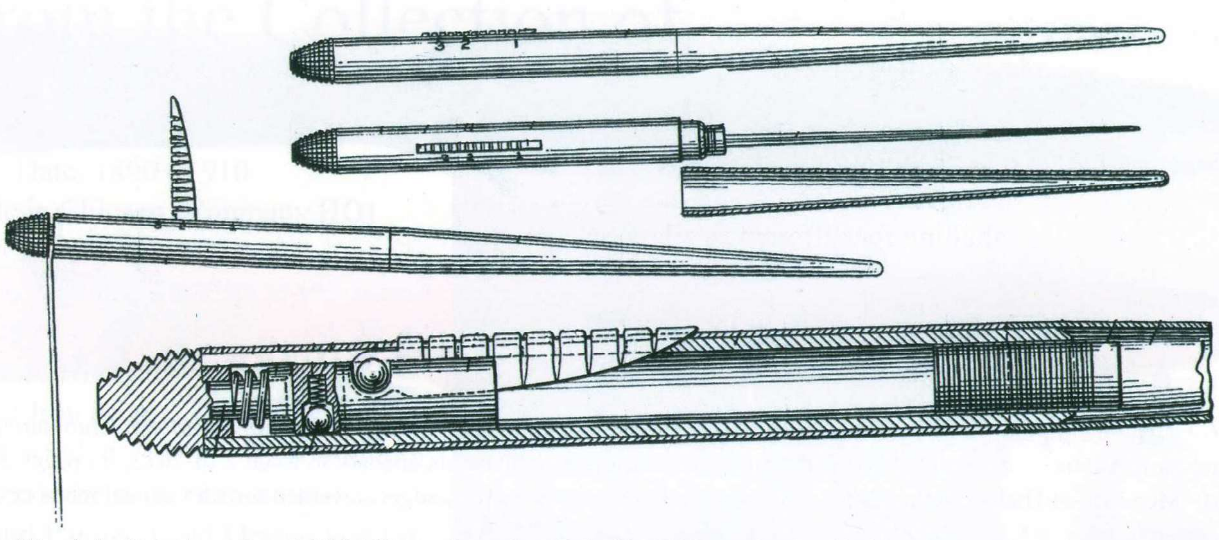
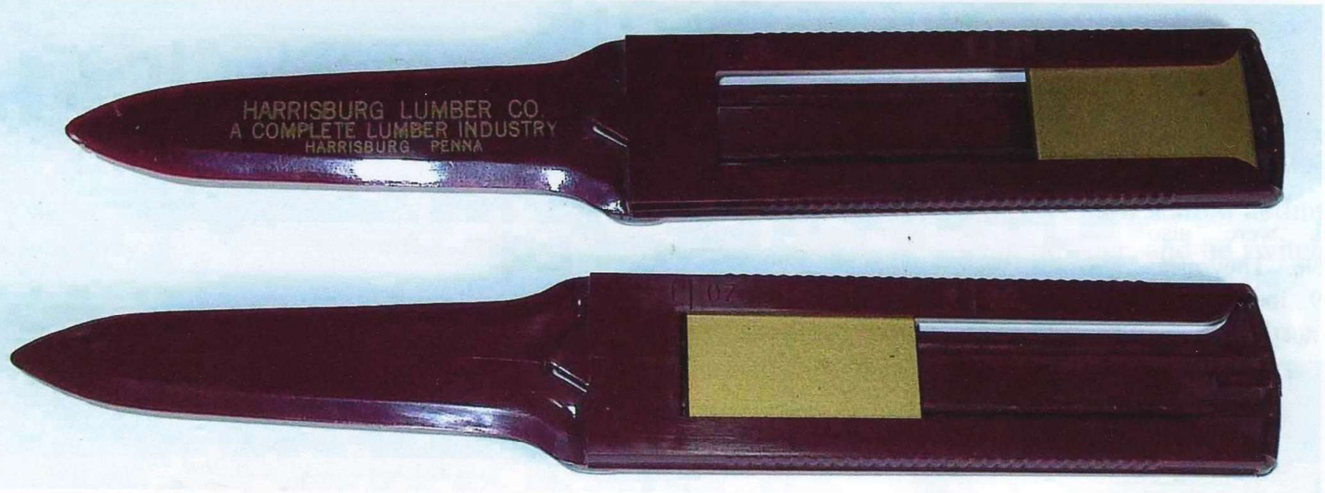
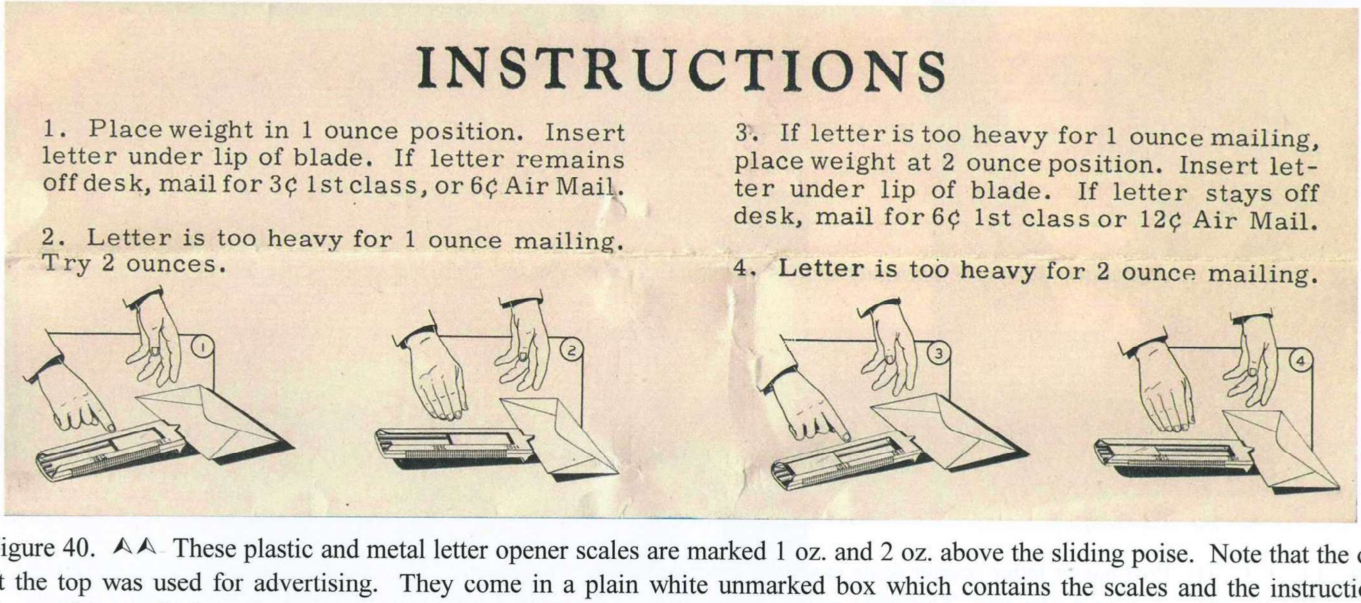


Figure 39. AA Patent number 2,586,443 was issued on Feb. 19, 1952 to Charles Skelley of New York City for a Combined Postal Scale, Check Protector and Letter Opener. The handle flips up to act as a holder for the scale, which utilizes a sliding cylindrical poise inside the scale. The letter slips into a slot between the beam and the check protector. No example has been found.





INSTRUCTIONS

1. Place weight in 1 ounce position. Insert letter under lip of blade. If letter remains off desk, mail for 3¢ 1st class, or 6¢ Air Mail.

2. Letter is too heavy for 1 ounce mailing. Try 2 ounces.

3. If letter is too heavy for 1 ounce mailing, place weight at 2 ounce position. Insert letter under lip of blade. If letter stays off desk, mail for 6¢ 1st class or 12¢ Air Mail.

4. Letter is too heavy for 2 ounce mailing.

Figure 40. AA These plastic and metal letter opener scales are marked 1 oz. and 2 oz. above the sliding poise. Note that the one at the top was used for advertising. They come in a plain white unmarked box which contains the scales and the instructions shown above. The letter opener scales measure 9 inches long and almost 2 inches wide. The postage rates on the instructions indicate those in effect from 1932 to 1958. No patent has been found.

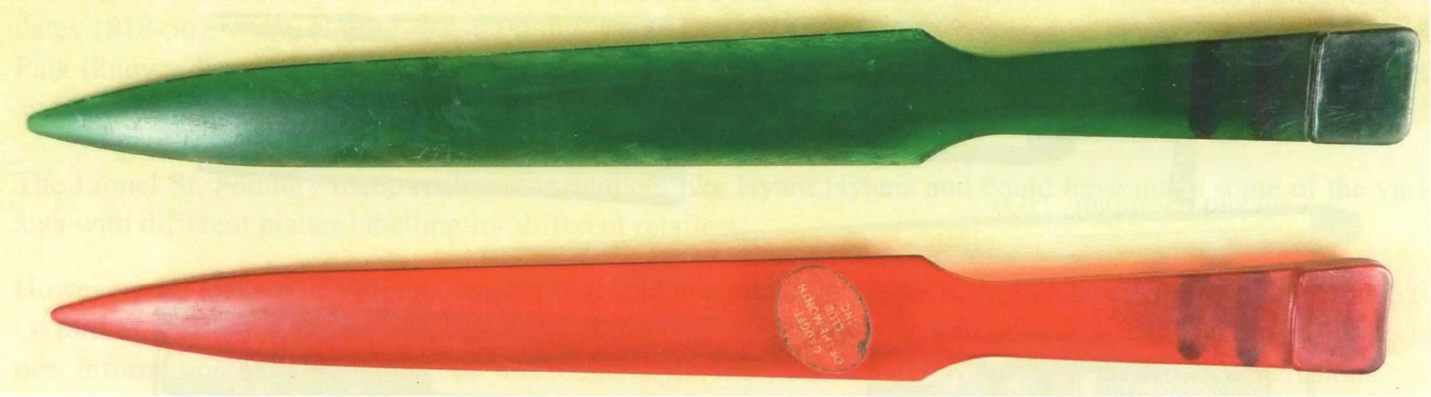


Figure 41. ⩓⩓ These simple rocker type letter opener scales were sent to members of the *Gadget of the Month Club* during the late 1940s and early 1950s. An article by Bill Berning covering these implements appears in issue 2 of 2012, on pages 3822-3833 of EQM. Members of Gadget of the Month Club received these as one of the gadgets awarded for a $5 annual membership.

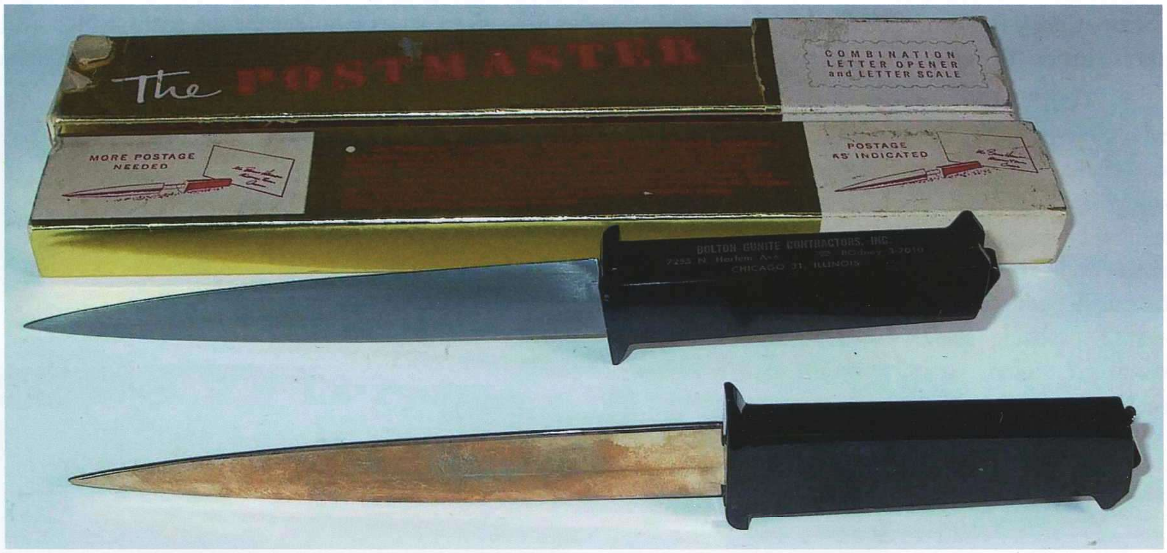
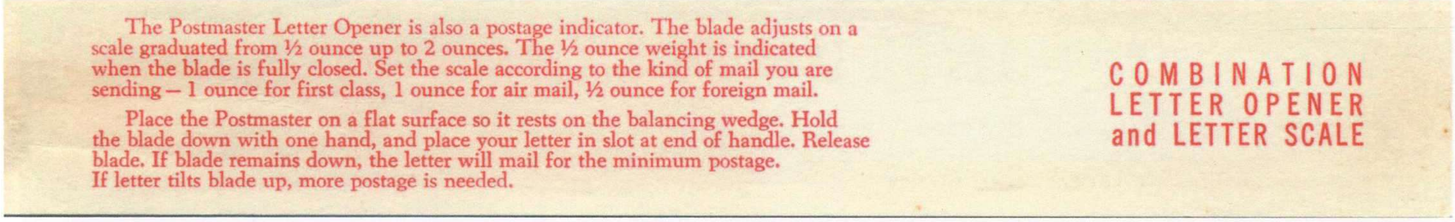


Figure 42. ➢➢ The Postmaster letter opener scale came in a red, gold and white box. These metal and plastic gadgets were available with brass and pewter colored blades, advertising options were also available. They measure 9 inches long when not in use and 11 inches when extended to weigh a 2 ounce letter.



The Postmaster Letter Opener is also a postage indicator. The blade adjusts on a scale graduated from ½ ounce up to 2 ounces. The ½ ounce weight is indicated when the blade is fully closed. Set the scale according to the kind of mail you are sending – 1 ounce for first class, 1 ounce for air mail, ½ ounce for foreign mail.

Place the Postmaster on a flat surface so it rests on the balancing wedge. Hold the blade down with one hand, and place your letter in slot at end of handle. Release blade. If blade remains down, the letter will mail for the minimum postage. If letter tilts blade up, more postage is needed.

COMBINATION
LETTER OPENER
and LETTER SCALE

Figure 43. ⩓⩓ The instructions for the Postmaster indicate that this rocker type letter opener scale is preloaded for ½ ounce.

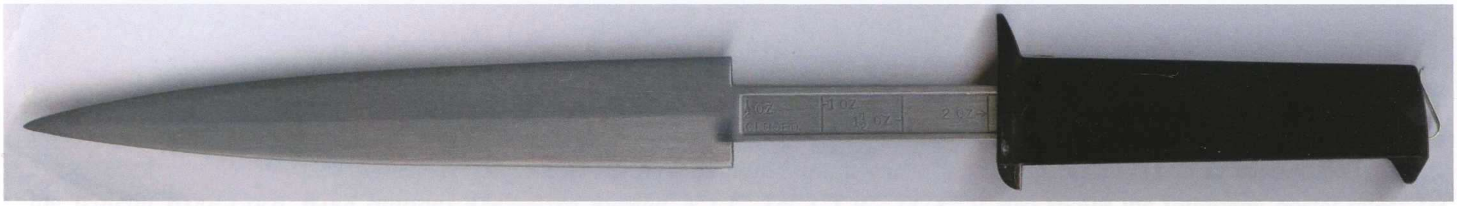
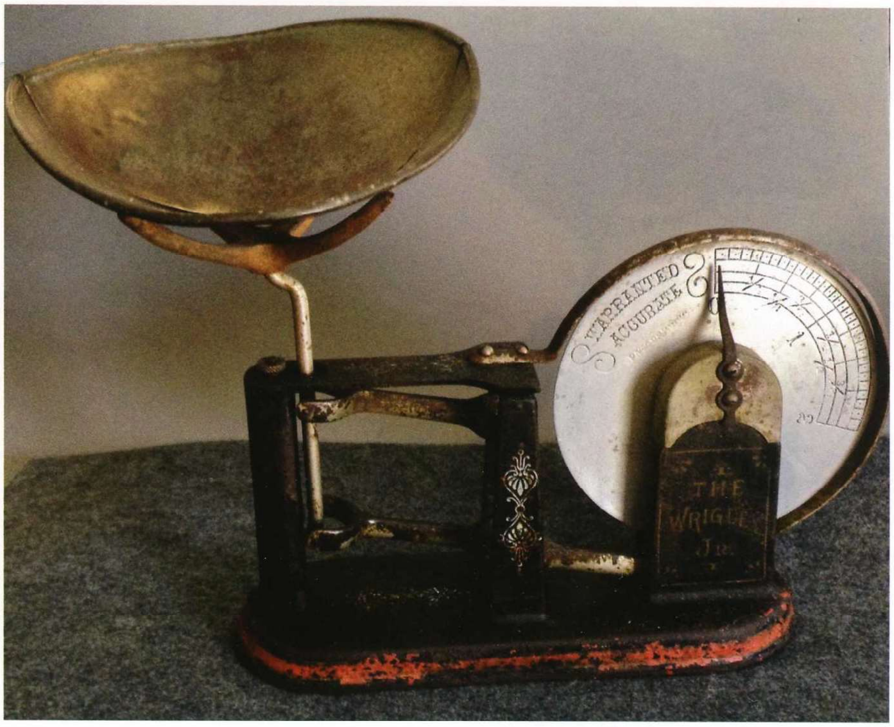


Figure 44. ⩓⩓ The Postmaster letter opener scale is shown extended to its full capacity of 2 ounces. The letter, to be weighed, fits into the clip at the butt of the handle. The scale weighs letters from ½ ounce to 2 ounces by ½ ounce. It has a plastic handle and a non-magnetic metal blade and letter clip.

From the Collection of

BY GREGG MOTTER



The Wrigley Company
2-Pound Candy Scale
Mfg. Date: 1890 - 1910
Made in Chicago (Company HQ)

Scales:

- O to 2 Lbs. in 1 oz. by ¼ Lb. increments

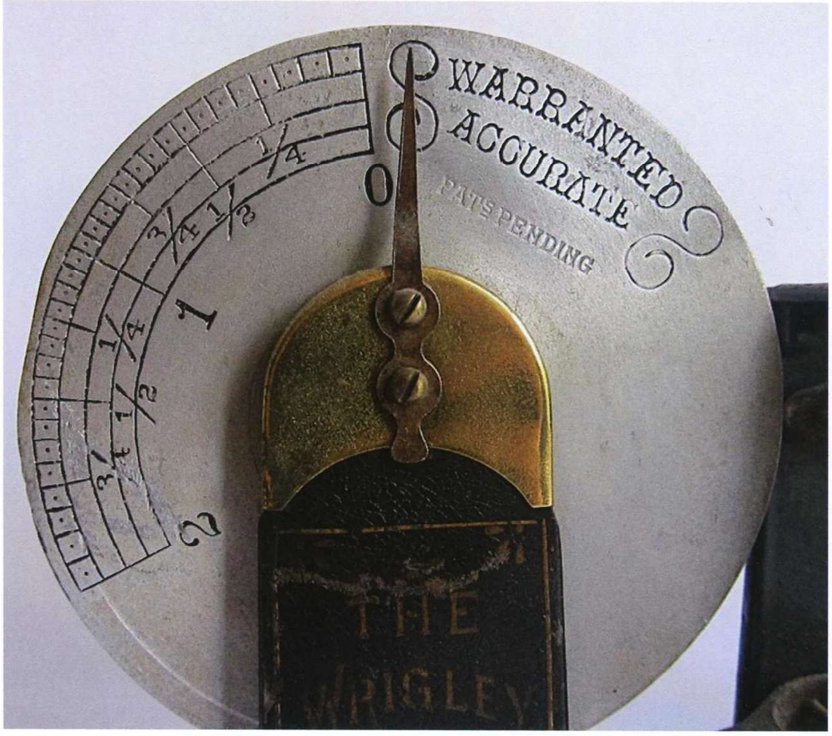
Construction:

- Cast Iron Frame
- Two-Sided Revolving Aluminum Dial to indicate weight of candy
- Hand Painted Gold Design and Pin Striping

Patent: Applied for, but not issued

Historical Significance:

- Counter top scale offered in catalog as "Premium Offer #39", and stated it "was sensitive enough to weigh the finest drugs!"
- Wrigley was originally in the Baking Powder business, and as an advertising premium started adding a stick of chewing gum to every box. Gum became more popular than the baking powder, and he switched business.
- Wrigley was an advertising genius of his day, utilizing premium give-aways, direct mailing of samples, and billboards.

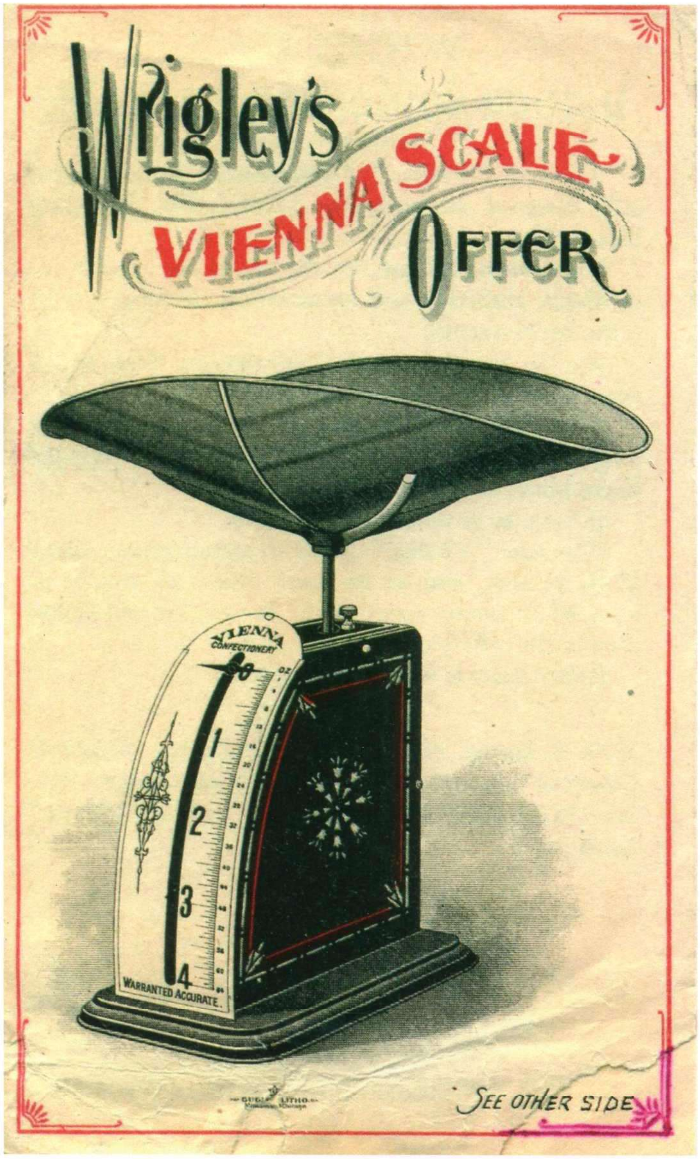


Close-up of rotating aluminum scale dial.

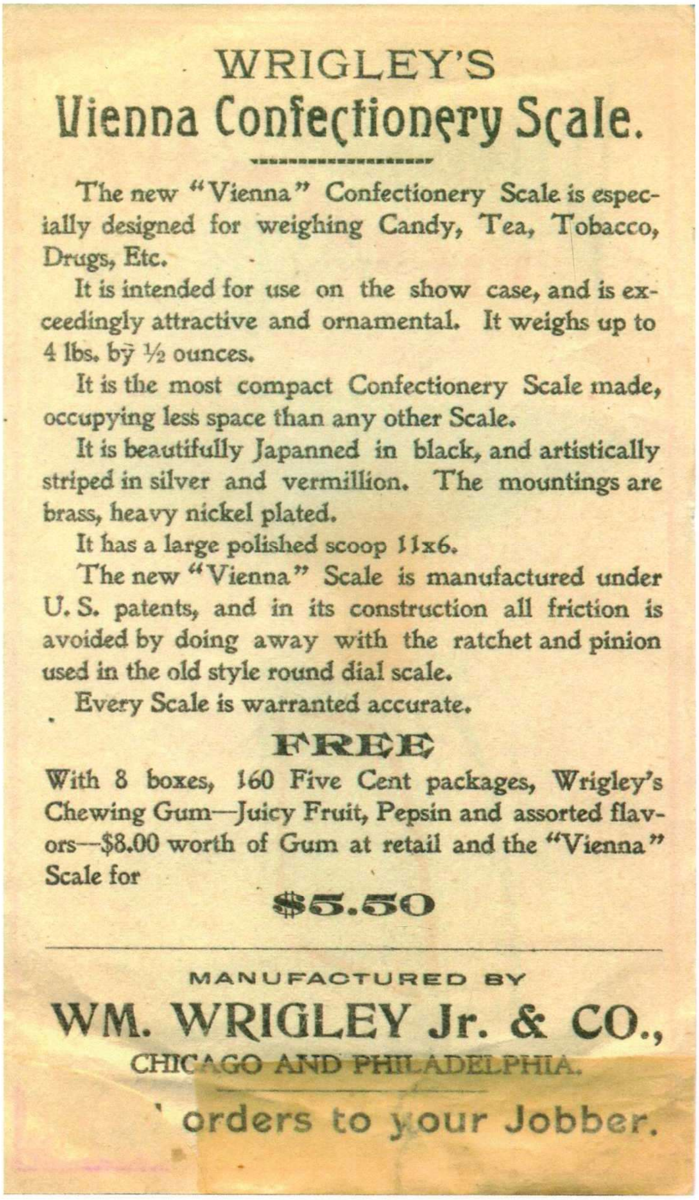
William Wrigley, Jr.

Editor's Note: This scale was made by Essington Gilfillan. More information about Gilfillan may be found in EQM pages 3672-3684.

Old Advert



This old advertising card was for another give-away offered by the Wrigley Company in Chicago. If a merchant bought enough chewing gum, he could get a free scale like the one advertised here or the one on the preceding page in EQM.



WRIGLEY'S

Vienna Confectionery Scale.

The new "Vienna" Confectionery Scale is especially designed for weighing Candy, Tea, Tobacco, Drugs, Etc.

It is intended for use on the show case, and is exceedingly attractive and ornamental. It weighs up to 4 lbs. by ½ ounces.

It is the most compact Confectionery Scale made, occupying less space than any other Scale.

It is beautifully Japanned in black, and artistically striped in silver and vermillion. The mountings are brass, heavy nickel plated.

It has a large polished scoop 11x6.

The new "Vienna" Scale is manufactured under U. S. patents, and in its construction all friction is avoided by doing away with the ratchet and pinion used in the old style round dial scale.

Every Scale is warranted accurate.

FREE

With 8 boxes, 160 Five Cent packages, Wrigley's Chewing Gum—Juicy Fruit, Pepsin and assorted flavors—$8.00 worth of Gum at retail and the "Vienna" Scale for

$5.50

MANUFACTURED BY

WM. WRIGLEY Jr. & CO.,
CHICAGO AND PHILADELPHIA.

orders to your Jobber.

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EQUILIBRIUM®

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2018 ISSUE NO. 3

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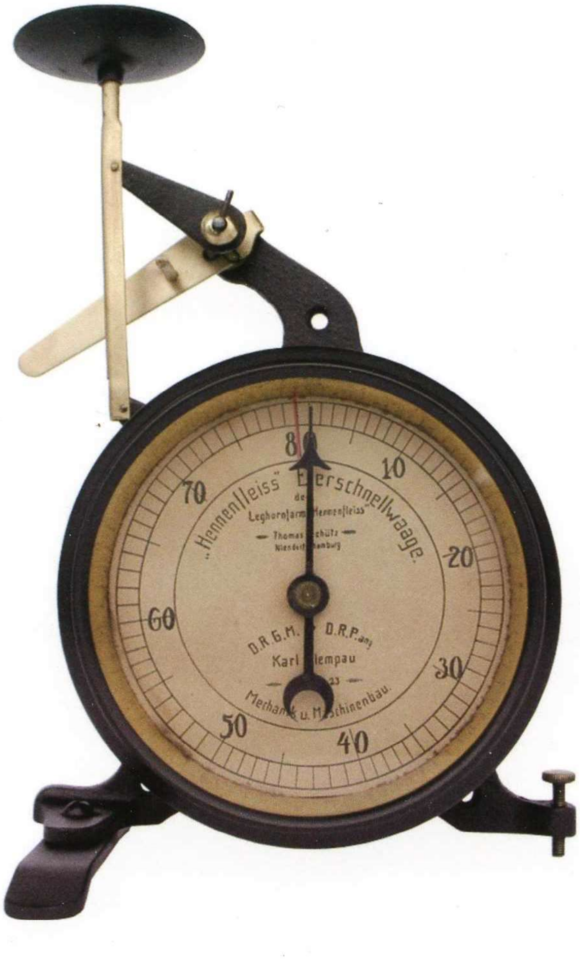
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Thomas chütz
Niendorf mburg
D.R.G.M.
D.R.P.ang
Karl lempau
23
Mechan k u. M schinenbau.

Cover Picture

The rare egg scale was made in Hamburg, Germany by Karl Klempau. It is marked Eierschnellwaage or Fast egg scale. It is graduated in grams from 0 to 80 on its circular dial making it look very much like an old alarm clock.

For more information on German egg weighing scales see pages 4499 to 4517 in this issue of EQM

John Weber Collection.

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Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

The Celler Egg Sorting Scale of Fabian, the Preceding and More

BY ANDRÉ SOL

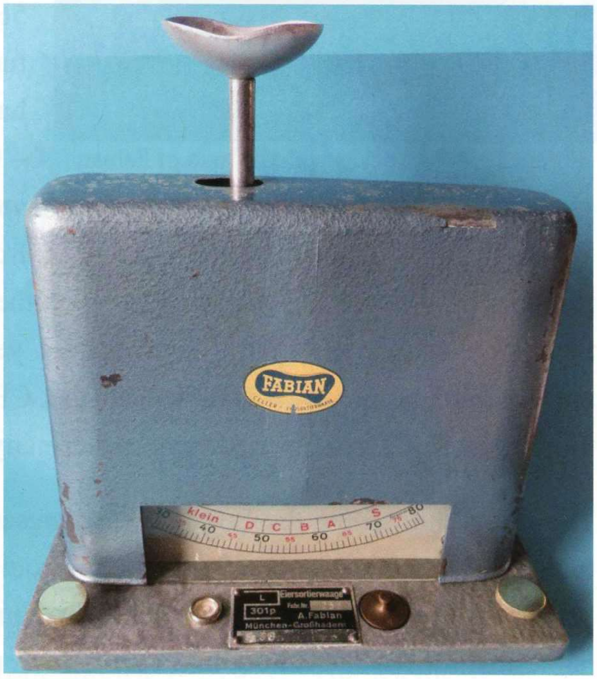


Figure 1. ⩓⩓ The Fabian Celler Egg Sorting Scale.

The Reason

Sometimes you come across an egg scale from Fabian at auctions, Figure 1. I bought one on the internet. At the German Patent Office I found the GebrauchsMuster application (a utility patent) in the name of August Fabian from Munich-Großhadern in Germany [1]. That application was submitted April 19, 1956 and approved June 28, 1956. The title on the application is: Eierwaage (Egg Scale). In the Gebrauchsmuster application are drawings of the front view and of a side view (Figure 2). The scale housing in the drawing is made of transparent Plexiglas. In the typed text of the application the specification for the scale housing ~~of transparent material~~ has been crossed out. The later, actually in series, made Fabian egg scale has a steel casing; on the front is a sticker (Figure 3) with a logo with the name Fabian and underneath the text CELLER – EIERSORTIER-WAAGE. The second word is German and can be translated as Egg Sorting Scale, but what does CELLER mean?

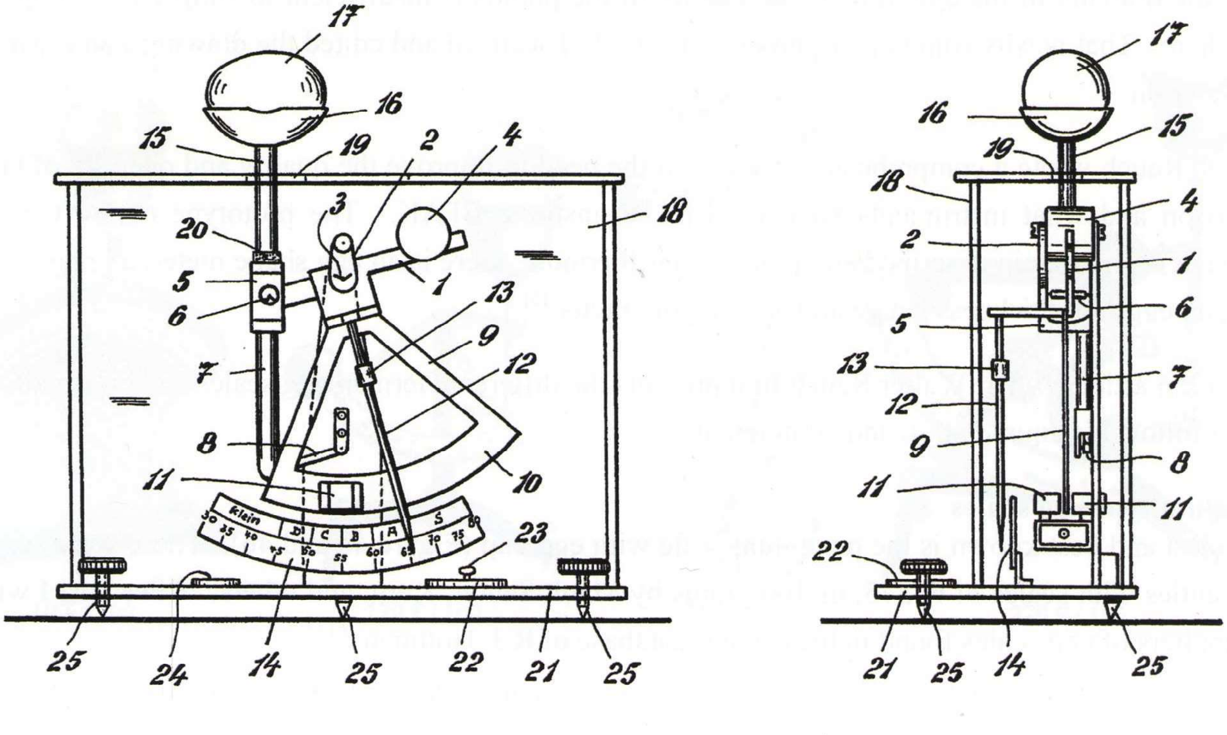


Figure 2. ⩓⩓ The figures from the Gebrauchsmuster-Anmeldung DE1725076U of April 19, 1956.

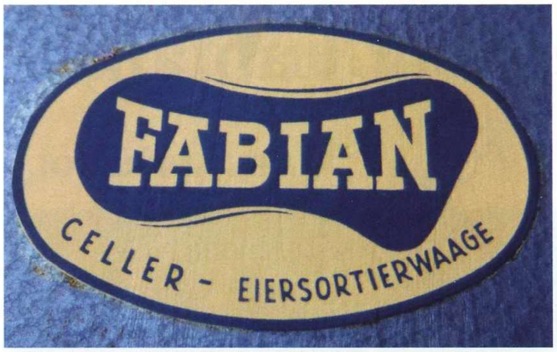


Figure 3. ▲▲ Sticker with the logo of Fabian in 1956 and the text CELLER – EIERSORTIERWAAGE.

Using Google, Google books, and by patiently searching, I found out that a Celler Yearbook, Volumes 4-6, has an article by Dr. Walter Rauch with the title: *Eine neue Eierwaage* (German meaning: A New Egg Scale) [2]. I also retrieved some page numbers: 56, 57, and 59. In which volume of the Yearbook the article is actually found was unclear for the time being. That Celler Jahrbuch has a more extensive title: Kleintierzucht in Forschung und Lehre – Celler Jahrbuch (translation: *Small Animal Breeding in Research and Teaching* - Celler Yearbook). I bought second-hand Volume 4 from 1955, which turned out to be not the right part. I asked the provider of Volume 6 if the article was on the aforementioned pages, which turned out not to be the case. So, the article had to be in the intermediate year book Volume 5 from 1956. Unfortunately, that part was untraceable. However, it is now clear that CELLER means: "from CELLE". Celle is a city and the capital of the district Celle in Lower Saxony in Germany.

The research institute the Bundesforschungsanstalt für Kleintiersucht (BFAK) in Celle did not appear to exist under that name anymore. Fortunately, it quickly became clear that the institute was merged into the FLI, the Friedrich-Loeffler-Institut, the Bundesforschungsinstitut für Tiergesundheit. The BFAK now exists under the name Institut für Tierschutz und Tierhaltung (ITT). Mrs. Maren Hertlein, contact person at the ITT library in Celle [3], was kind enough to send me upon request a digital copy of the article [2] by e-mail, for which many thanks. I also received a copy of a second publication about this egg scale. It has the same title 'Eine neue Eierwaage' only the layout appears to differ [4]. The images in both articles are always a photo with a schematic drawing of the egg scale. The quality of the photos is insufficient to simply use a copy of all egg scales here. That is why some other photos were used. I scanned and edited the drawings, and I show and use them later on.

In 1958, Rauch wrote a comprehensive article on the need to improve the quality and quantity of German egg production and what instruments were used at his institute BFAK. The prototype of the Celler Eiersortierwaage is once again described and praised. Furthermore, there is an egg shape meter, a breaking resistance meter, an eggshell thickness gauge and an egg yolk meter [5].

In his 1956 article [2], Dr. Walter Rauch first presents the different German egg scales and briefly discusses them. I follow his enumeration and complete it.

Pendulum type egg scales

The oldest and best known is the pendulum scale with egg cup (Figure 4a and 4b). These were supplied from the twenties with scales of 60, 75, or 100 grams by Maul, Sauter, Kern, and others. After this, I will mention the suppliers of egg scales found in the catalog database of R.J. Holtman [6].

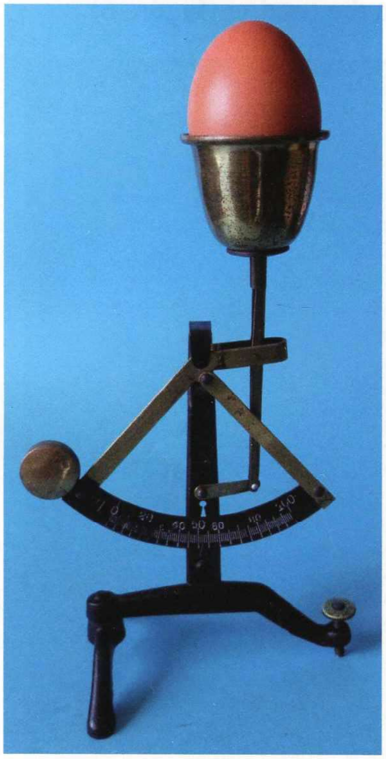
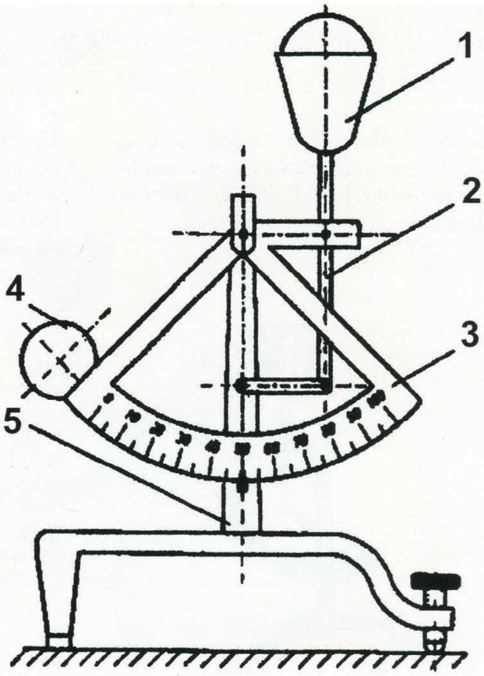


Figure 4a. ≺≺ Pendulum scale as egg scale, this copy was made by Jakob Maul.

Figure 4b. ➤➤ Parts list: 1. egg holder - 2. lever system - 3. scale – 4. counterweight – 5. standing frame (Figure in accordance with Rauch [2]).



Ph.J. Maul (after ± 1921) presented four different models on a product poster (Figure 5). The weighing range is 100 grams. The patent of the Rictus as a letter scale dates from August 17, 1921. The Rictus as an egg scale and this product poster date therefore from after the year 1921.

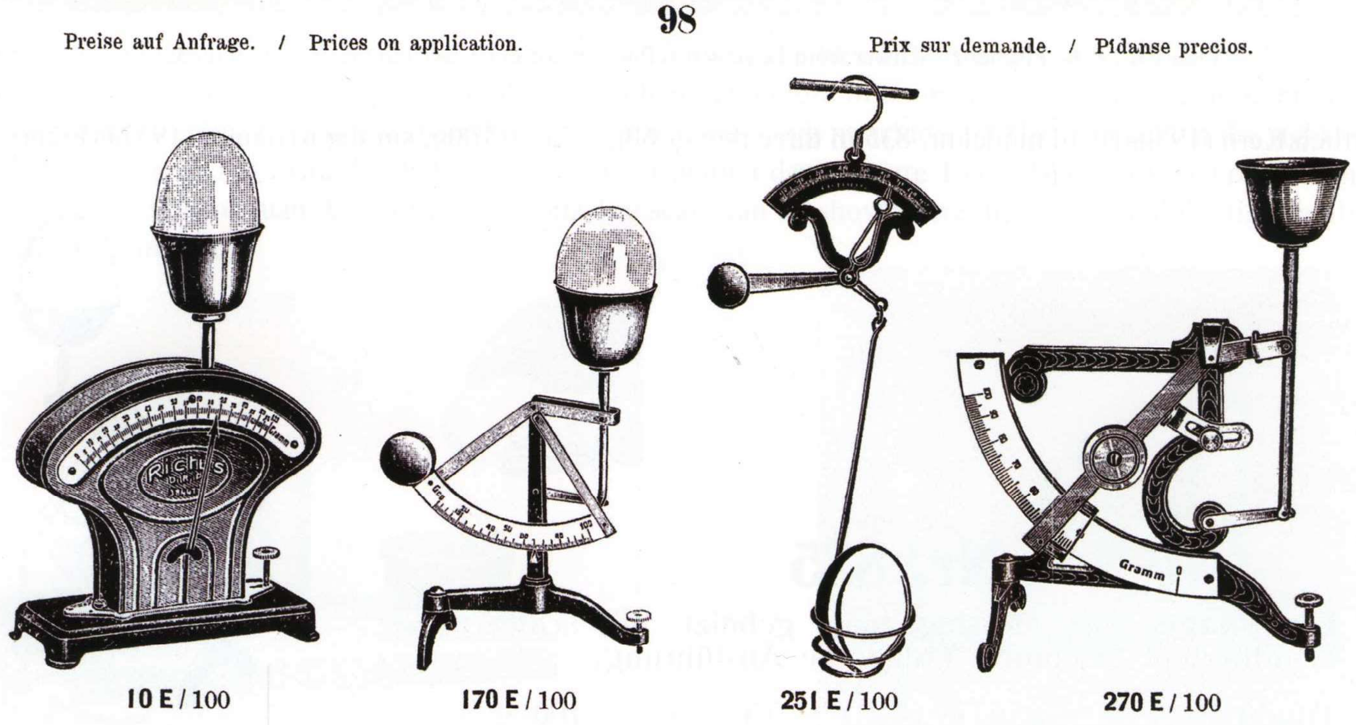
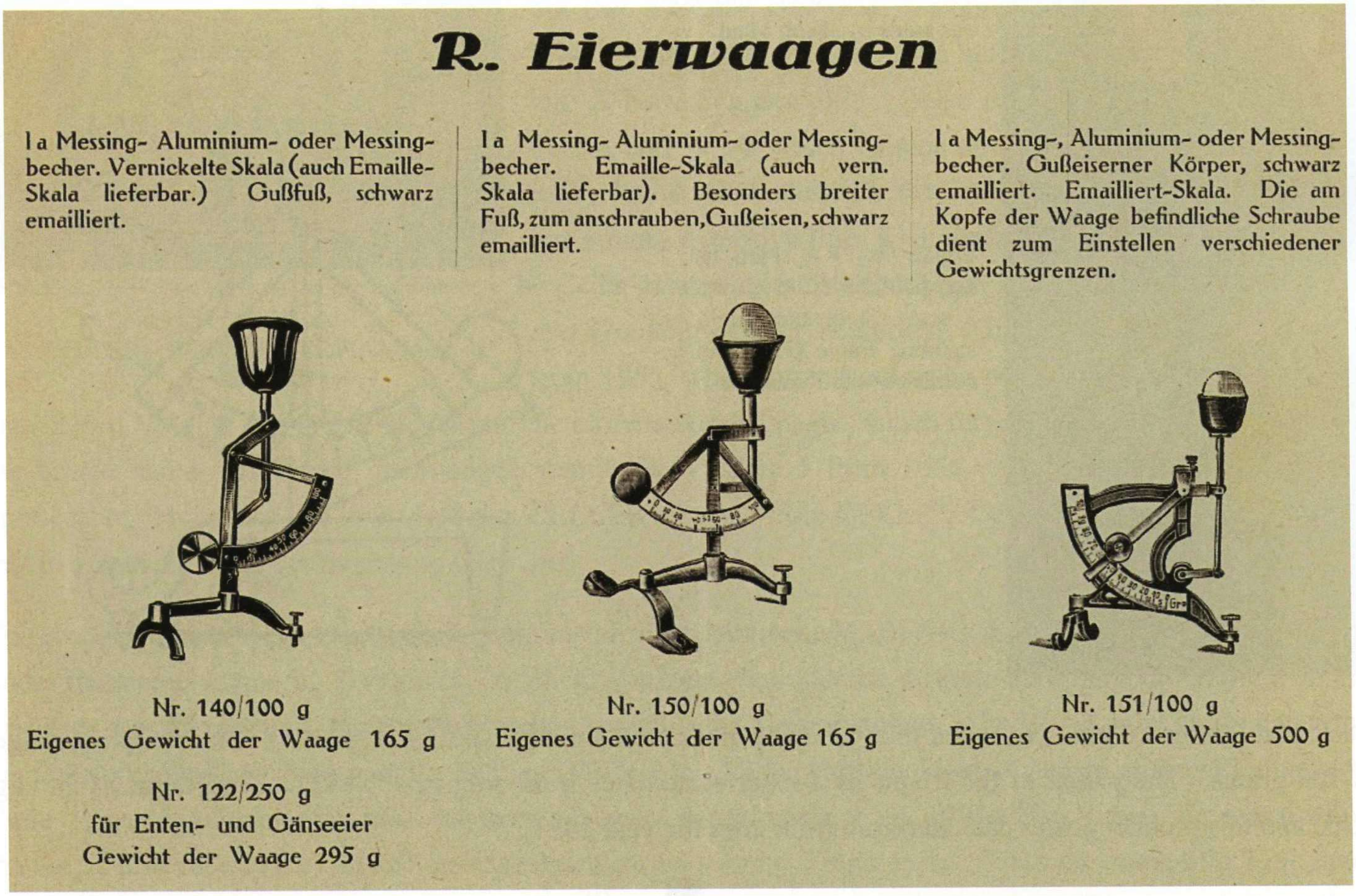

Preise auf Anfrage. / Prices on application.
98
Prix sur demande. / Pídanse precios.
Rictus
Gramm
10 E / 100
170 E / 100
251 E / 100
270 E / 100

Figure 5. ▲▲ Four egg scales as presented on a poster of Philipp Jakob Maul (about 1921).

Fischer & Schwar from Leipzig (1930s) presented four models; three are shown in the catalog (Figure 6).



R. Eierwaagen

I a Messing- Aluminium- oder Messingbecher. Vernickelte Skala (auch Emaille-Skala lieferbar.) Gußfuß, schwarz emailliert.

I a Messing- Aluminium- oder Messingbecher. Emaille-Skala (auch vern. Skala lieferbar). Besonders breiter Fuß, zum anschrauben, Gußeisen, schwarz emailliert.

I a Messing-, Aluminium- oder Messingbecher. Gußeiserner Körper, schwarz emailliert. Emailliert-Skala. Die am Kopfe der Waage befindliche Schraube dient zum Einstellen verschiedener Gewichtsgrenzen.

Nr. 140/100 g
Eigenes Gewicht der Waage 165 g

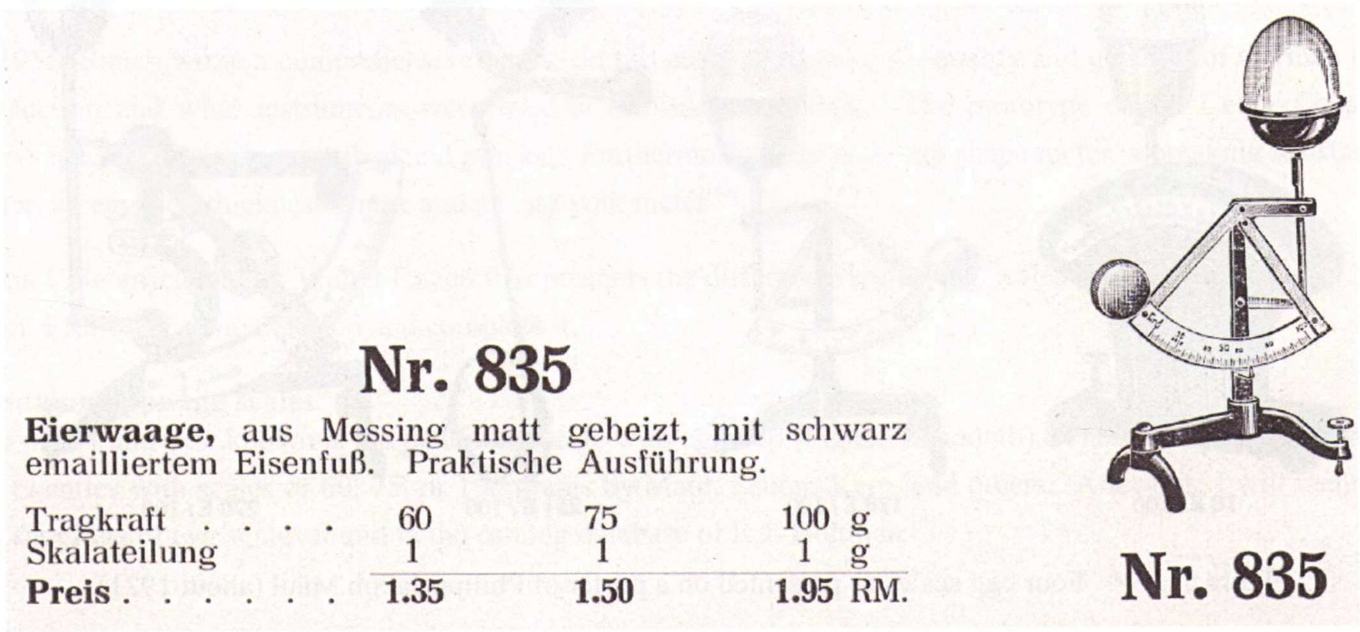
Nr. 122/250 g
für Enten- und Gänseeier
Gewicht der Waage 295 g

Nr. 150/100 g
Eigenes Gewicht der Waage 165 g

Nr. 151/100 g
Eigenes Gewicht der Waage 500 g

Figure 6. ⩓⩓ Fischer & Schwar from Leipzig has four versions (1930s), but only pictured three.

Gottlieb Kern (1930s) sold model nr. 835 in three ranges 60g – 75g – 100g, similar to Sauter (1932) (Figure 7).



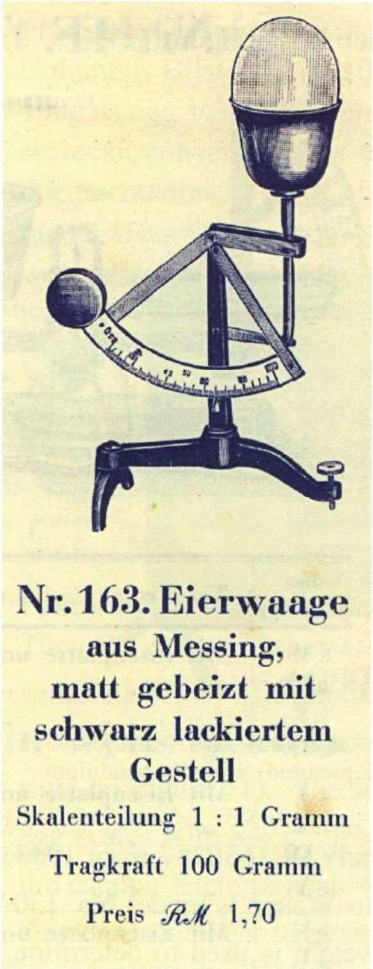
Nr. 835

Eierwaage, aus Messing matt gebeizt, mit schwarz emailliertem Eisenfuß. Praktische Ausführung.

Tragkraft	60	75	100 g
Skalateilung	1	1	1 g
Preis	**1.35**	**1.50**	**1.95** RM.

Nr. 835

Figure 7. ⩓⩓ Gottlieb Kern supplies model number 835 in three ranges (1930s).

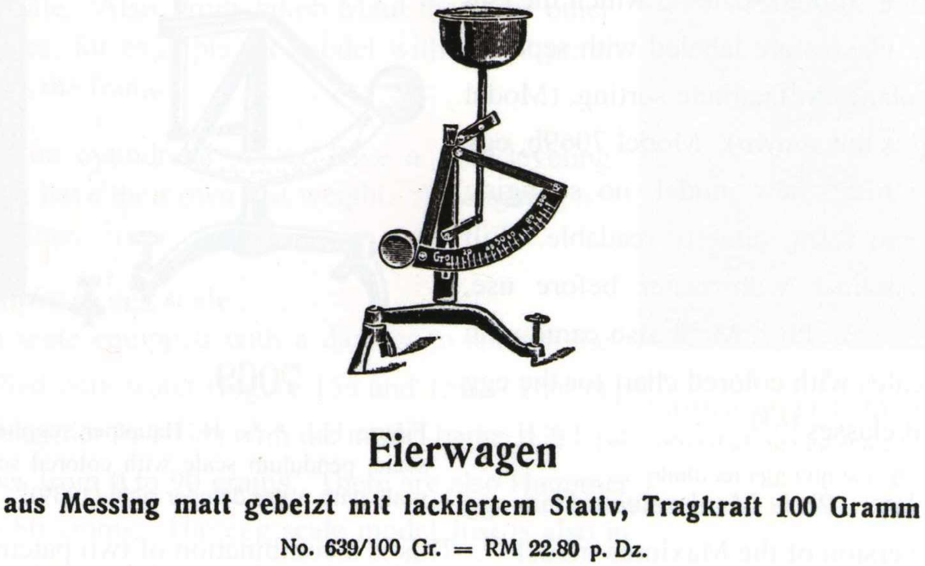


Nr. 163. Eierwaage
aus Messing,
matt gebeizt mit
schwarz lackiertem
Gestell
Skalenteilung 1 : 1 Gramm
Tragkraft 100 Gramm
Preis *RM* 1,70

Figure 8. ◄◄ Gebrüder Werbig Nossener Waagenfabrik supplies egg scale no. 163 (1930s).

Nossener Waagenfabrik Gebrüder Werbig (1930s) had three models, namely two unequal-arm balances, No. 6A and No. 6B these are not shown here, and one pendulum scale, No. 163 (Figure 8).

Jakob Maul from Zell (1931) one model 100g (Figure 9).



Eierwagen
aus Messing matt gebeizt mit lackiertem Stativ, Tragkraft 100 Gramm
No. 639/100 Gr. = RM 22.80 p. Dz.

Figure 9. ▲▲ Jakob Maul from Zell presented one model (1931).

Rheinische Waagenfabrik August Freudenwald (1932) under the brand Rhewa showed a model with No. 121. This is a combination of an egg scale on the left with at the bottom of a tube part an incandescent light bulb to check the egg quality by sending light through and make the egg translucent. The cylinder on the right is an option: a stamp pad to mark the egg and to provide it with a date (Figure 10a). Thanks to the cooperation of the Spanish collector Juan A. Gil Barquero this egg scale can be shown here, the fitting and the light bulb are missing (Figure 10b).

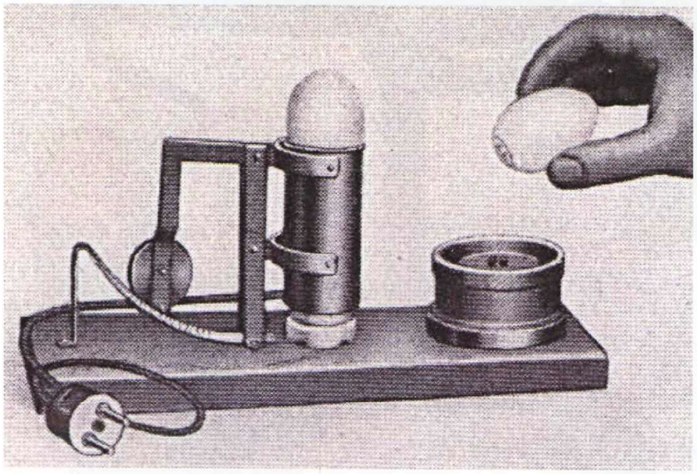


Figure 10a. ▲▲ Rheinische Waagenfabrik August Freudenwald (Rhewa) presents an egg scale with a light source to make eggs translucent and control them and a stamp cushion (option) on a wooden base as model no. 121 (1932).

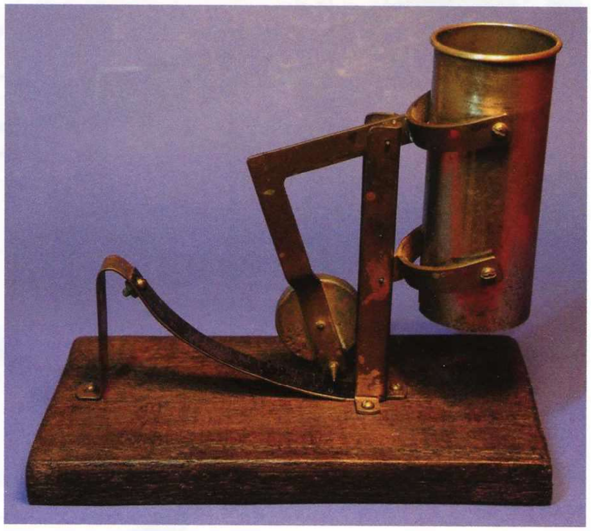


Figure 10b. ▲▲ Rhewa egg scale no. 121, without the fitting and light bulb. (Photo kindly provided by Juan A. Gil Barquero, Spain)

Sauter (1932) model No. 835 in three ranges 60g – 75g – 100g, (see above at Gottlieb Kern, Figure 7).

H. Hauptner (1939) delivered three models: two pendulum scales and the Just model. Model 7069 is a letter scale version. Model 7069p is the same model with a colored scale on which the egg weight classes are labeled with separate color planes to facilitate sorting, (Model 7069p is not shown). Model 7069b, egg scale "Just", new model, no swinging back and forth, directly readable. Fill the container with water before use, (Figure 11). Ph.J. Maul also came with egg scales with colored chart for the egg weight classes [7, 8].

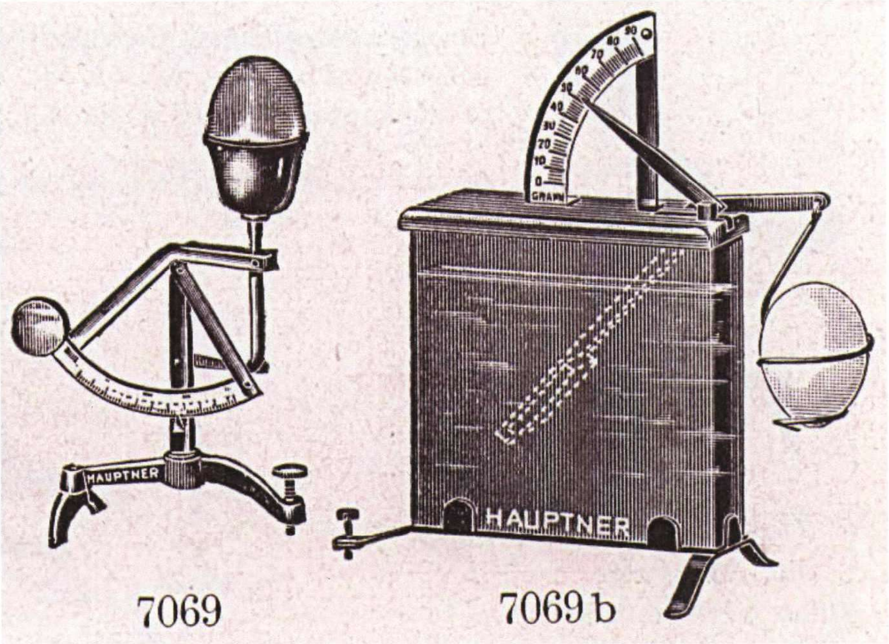


Figure 11. H. Hauptner supplies three egg scales: left as pendulum scale, pendulum scale with colored scale (not pictured) and the pendulum scale with water damper right (1939).

N.B. later, Ph.J. Maul released an egg scale version of the Maximus model [9]. This is a combination of two patents, namely DE1650767 from 1953 and DE1722900 from 1956. On a product sheet the Maximus Präzisions-Uberporto-Waage is model No. 130 (Figure 12). The egg scale has the model name Excellenta (± 1957). A slight weight is used to determine what the egg weighs. This scale has a cheap knife edge bearing, two adjusting screw feet and a spirit level. The weighing range is 50g-51-52-53-54-55-60-65-70g. (Figure 13, thanks to Jacqueline and Huub Geurts for the photo). This egg scale is an outsider. Weighing with such a sliding poise will take a lot of time. The egg scale was not calibrated. Another photo can be found in [10].

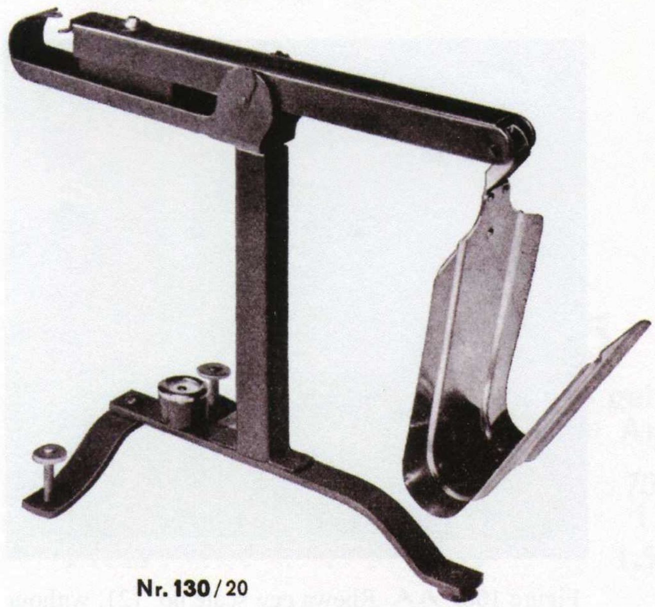


Figure 12. The Maximus Präzisions-Uberporto-Waage model no. 130 of Ph.J. Maul.

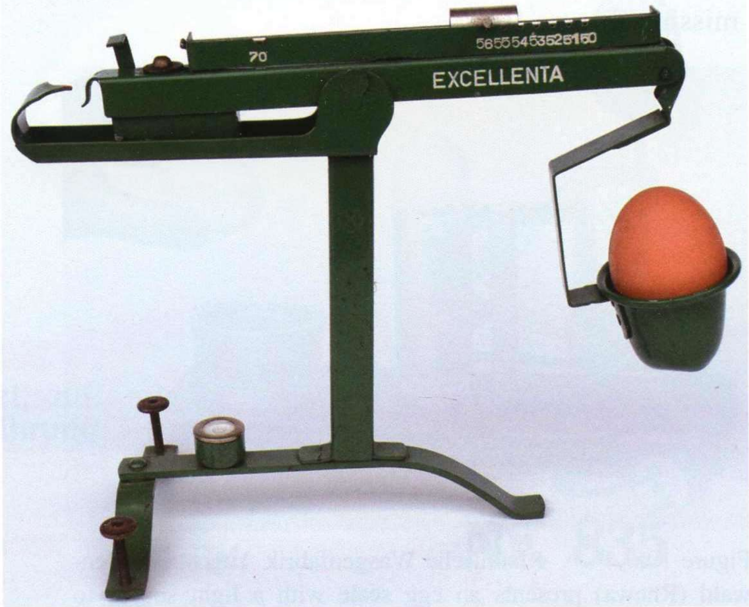


Figure 13. The Excellenta egg scale of Ph.J. Maul (Photo kindly provided by Jacqueline and Huub Geurts).

From Ph.J. Maul I know – from the internet only and not from the catalogs - the Columbus Bilateral 30g/100g (Figure 14) as egg scale [11, 12] and also the Novitus 100g as egg scale. It is unclear whether these egg scales are really original egg scales or converted letter scales that sell better to collectors. Catalogs or other documentation as proof of authenticity are unfortunately missing. Whether the model Usus [13] can be regarded as an egg scale is doubtful. It is a letter scale with a handy dimple in which an egg can lie stably. The scale of 500 grams is indeed very large for a real egg scale. Also, from Jakob Maul there are other pendulum scales made as egg scales, for example the model with a 100 gram scale and the abbreviation JMAZ on the frame.

All these pendulum scales rotate on cylindrical shafts, have a zero leveling screw, are not calibrated and do not have their own test weight. A weighing requires a relatively large amount of time.

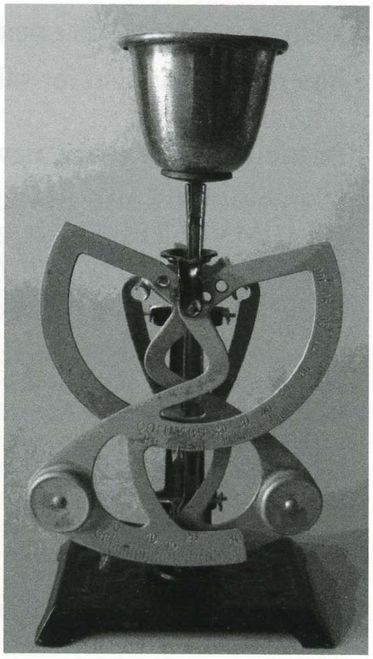
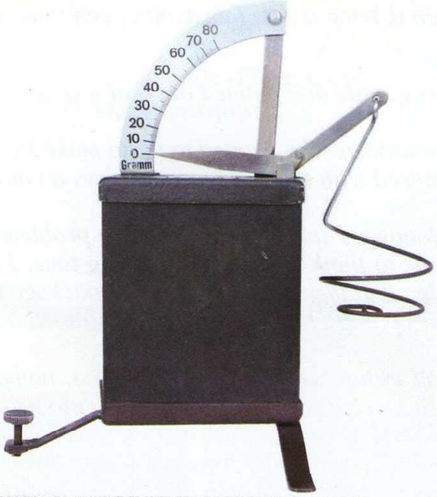


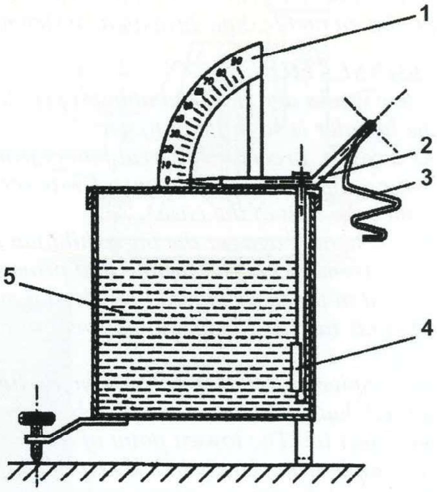
Figure 14. ▲▲ Columbus Bilateral of Ph.J. Maul performed as an egg scale (for the photo an egg cup was put on a letter scale by the writer)

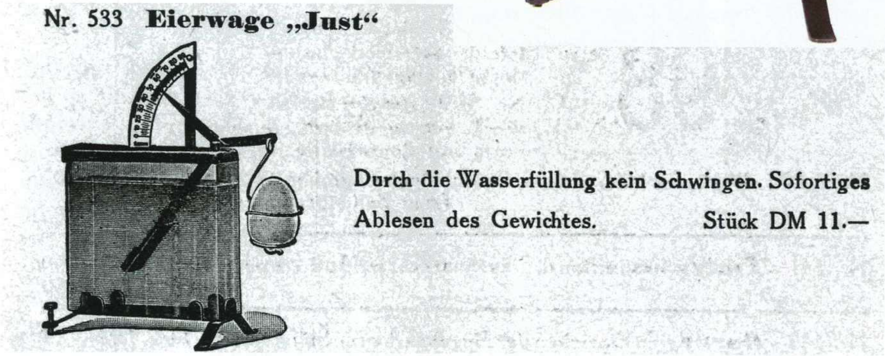
Pendulum scales with water damper as egg scale

Then the article [2] shows an egg scale equipped with a damper to shorten the weighing time. The damper is filled with water (Figure 15a and 15b). That egg scale came from, among others, Hauptner (± 1939) with the model name JUST (at right on Figure 11). The scale goes from 0 to 90 grams. There are also Hauptner egg scales with a scale from 0 to 80 grams. The egg scale model Just is also in the catalog Kleintierzucht-Bedarf of August Fabian from 1949 [14]. On the image in the Fabian catalog, egg classes also appear to be on the scale of 0-90 grams (Figure 16). The company Kosmos from Göttingen sold a very similar model. There is the same model egg scale without brand and partly in plastic with a scale from 0 to 80 grams and on which from 45 to 80 grams also colored areas mark the egg weight classes.

Figure 15a. ➤➤ Egg scale with water damper.







Nr. 533 Eierwage „Just“

Durch die Wasserfüllung kein Schwingen. Sofortiges Ablesen des Gewichtes. Stück DM 11.–

Figure 15b. ▲▲ Parts list: 1. scale – 2. weighing lever – 3. egg holder – 4. counterweight – 5. water reservoir (Figure in accordance with Rauch [2]).

Figure 16. ◀◀ the JUST egg scale with water damper from the 1949 catalog of Fabian.

Also, the older regular pendulum scale with egg cup was still supplied, (Hauptner, Figure 11). The pendulum model was also for sale with a per each egg class different colored scale area.

In the Dutch regional newspaper, the *Limburgsch Dagblad* of February 11, 1931 [15] in the section FOR HOUSE AND COURT (VOOR HUIS EN HOF), under the heading SMALL POULTRY BREEDING (PLUIMVEETEELT) is an article with the title *A NEW PRACTICAL HATCHING EGG SCALE (EEN NIEUWE PRACTISCHE BROEDEIERWEGER)*, written by the veterinarian Dr. Te Hennepe, from Rotterdam. I have copied the text and made a translation, see box.

Een paar weken geleden sprak ik over een practische eierweger en wees er op dat het toch zoo merkwaardig is, dat een alleronontbeerlijkst instrument voor den fokker zoo heel moeilijk te krijgen is.

Naar aanleiding hiervan kreeg ik verschillende brieven van liefhebbers, die een dergelijk toestel wilden probeeren te maken en eenige hebben daarbij bijzonder aardige constructieteekeningen gevoegd. Ik was daar zeer mee in mijn schik, omdat het getuigt van een flinke belangstelling onder de lezers. Maar nu komt het mooiste van het geval.

Een paar maanden geleden sprak ik te Hannover op de groote tentoonstelling daar over hetzelfde probleem met een fokker. Deze fokker achte zoo'n instrument zeer gewenscht en beloofde me er eens over te zullen denken. Gedurenden een heelen tijd vernam ik niets doch na het verschijnen in de bladen van mijn artikel ontving ik bericht dat er een aangeteekend pakketje voor mij aan het postkantoor lag, waarop ik 60 cent belasting moest betalen…… Ik onmiddellijk er op af en…….het pakketje bevatte een keurige eierweger! Dat was een zeer aangename verrassing!

De uitvoering is geheel in mijn lijn en in de lijn van de meeste briefschrijvers, n.l. het grondidee van brievenwegers is bewaard gebleven, maar de schaal is geheel anders.

Het is als het ware een groote brievenweger met een eierdopje inplaats van het tafeltje waar de brieven moeten liggen. Het laagste punt van de schaal ligt bij 40 gram en het hoogste punt bij 80. De wijzer loopt langs een flink dik geëmailleerde schaal waarop duidelijk zwarte strepen op ongeveer een halve c.M. van elkaar de gram aangeven. Ik wijs op deze geëmailleerde schaal, want verschillende meetinstrumenten hebben een koperen, waarop men uiterst moeilijk de verdeeling af kan lezen. Aardig gevonden is verder, dat de schaal vijf kleuren draagt, al naar de soort der eieren. Van 40-48 gram is de schaal vuurrood, dit is voor de zeer kleine eieren. Dan volgt een stuk van 48-53 gram helgroen, voor kleinere eieren, dan een stuk wit email, dus het duidelijkste deel der schaal van 53-60 gram. Dit is dus het deel dat wij fokkers 't meest noodig hebben voor onze kipeieren. Wij eischen van onze broedeieren een gewicht in de buurt van 59-60 gram. Van 60-65 gram is de schaal paars, voor zeer zware eieren van 65-80 gram is de kleur geel. Dit stuk zal door den eendenfokker het meest gebruikt worden want in deze rubriek behooren de eendeneieren thuis. Het instrument is keurig afgewerkt en op elke tafel stelbaar, heeft net als een brievenweger twee vaste pootjes en één, die uit een schroef bestaat, welke men op en neer kan schroeven. De prijs is ook matig en bedraagt slechts f 3.90. Dat kan dus voor geen fokker bezwaren opleveren.

Het voornaamste was: de nauwkeurigheid. Ik heb direct de gewichten gecontroleerd met die van een apothekersschaal en moet zeggen dat het instrument nauwkeurig genoeg werkt voor ons doel. We zijn dus met deze eierweger uit den brand, hebben een handig en niet te duur bruikbaar instrument en ik hoop dat de fabrikant er een flink succes mee zal hebben.

TRANSLATION

A few weeks ago, I talked about a practical egg scale and pointed out that it is so strange that an absolutely indispensable tool for the breeder is so difficult to get.

As a result, I received several letters from enthusiasts who wanted to try to make such a device and some of them added particularly nice construction drawings. I was very pleased with that, because it shows a considerable interest among the readers. But now comes the best of the case.

A few months ago, at the big exhibition at Hanover I spoke about the same problem with a breeder. This breeder considered such an instrument very desirable and promised me to think about it. For a long time, I did not hear anything but after my article appeared in the newspapers I received a message that there was a registered package for me at the post office, on which I had to pay 60 cents tax...... I immediately went to pick it up and .... the package contained a neat egg scale! That was a very pleasant surprise!

The implementation is entirely in my line and in line with most letter writers, namely the basic idea of letter scale has been preserved, but the scale is completely different. It is, as it were, a large letter scale with an egg cup instead of the table where the letters must lie. The lowest point of the scale is at 40 grams and the highest point at 80. The pointer runs along a rather thick enameled scale with clearly black stripes at about half a centimeter from each other indicating the grams. I point to this enameled scale, because different measuring instruments have a copper, on which it is extremely difficult to read the scale values.

Furthermore, and nicely executed is the scale in five colors, according to the type of eggs. From 40-48 grams the scale is red; this is for the very small eggs. Then a piece of 48-53 grams follows bright green, for smaller eggs, then a piece of white enamel, so the clearest part of the scale of 53-60 grams. So this is the part that we breeders most need for our chicken eggs. We demand a weight of 59-60 grams from our hatching eggs. From 60-65 grams the bowl is purple, for very heavy eggs of 65-80 grams the color is yellow. This part will be used the most by the duck breeder because in this category the duck eggs belong. The instrument is neatly finished and adjustable on every table, has just like a letter scale two fixed legs and one, which consists of a screw, which can be screwed up and down. The price is also moderate and amounts to only 3.90 Dutch guilders. That can therefore not raise any objections for a breeder.

The main thing was: the accuracy. I immediately checked the weights with those of a pharmacy scale and have to say that the instrument works accurately enough for our purpose. So our problem is solved (a Dutch saying: we are out of the fire) with this egg scale, have a handy and inexpensive useful instrument and I hope the manufacturer will have a big success with it.

This article proves that scales with colored surfaces to clearly mark the egg weight classes already existed at the beginning of 1931.

The pendulum scales with water damper also have a cylindrical shaft, a zero leveling screw, are not calibrated and do not have their own test weight. Despite the fact that the egg in the holder continues to swing, a weighing requires a little less time due to the damping in water of the movement of the main scale mechanism. However the water evaporates, pollutes, and the damping is temperature-dependent.

Pendulum scales with oil damper as egg scale

Surprising is the Duxa-Waage, the next egg scale in the article by Rauch (Figure 17a and 17b). I do not know who put this egg scale on the market. I only saw this scale on the internet once in 2009 (Figure 18). This egg scale has an oil damper and knife edge bearings. A check weight and a spirit level can be seen on the base plate on the photos. There are two adjustable feet in the front corners of the baseplate. The third non-adjustable fixed foot is in the middle at the back. The pointer goes from left to right and the scale from 40 to 75 grams. The distance –space between the marks- is 3.5 millimeters.

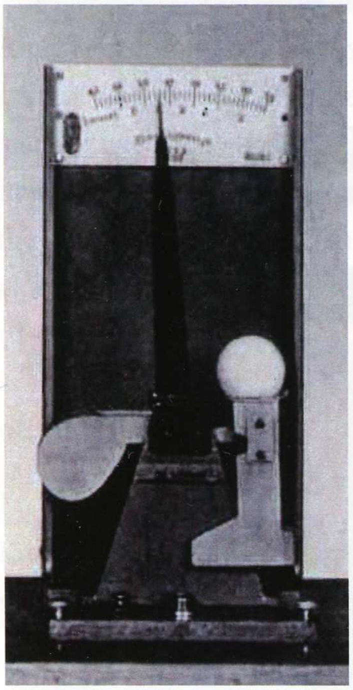


Figure 17a. ≺≺ The Duxa egg scale (taken from Rauch [2]).

Figure 17b. ≻≻ Parts list: 1. scale – 2. pointer – 3. egg – 4. hanger with egg holder – 5. weighing lever – 6. damping wing - 7. oil reservoir (Figure in accordance with Rauch [2]).

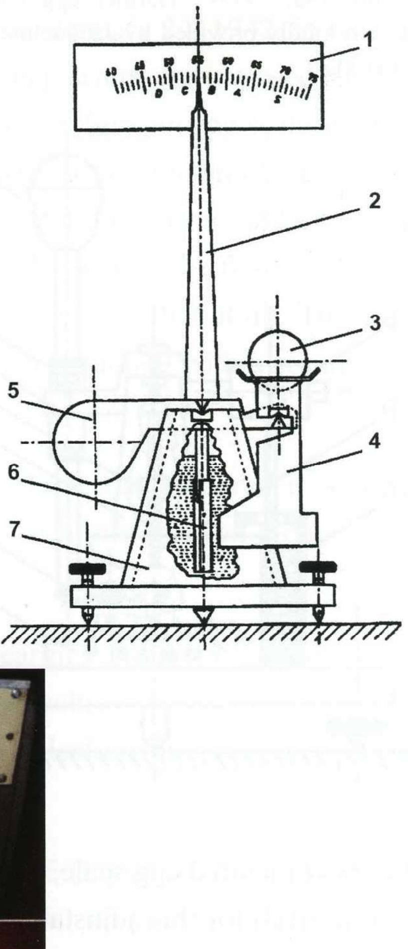
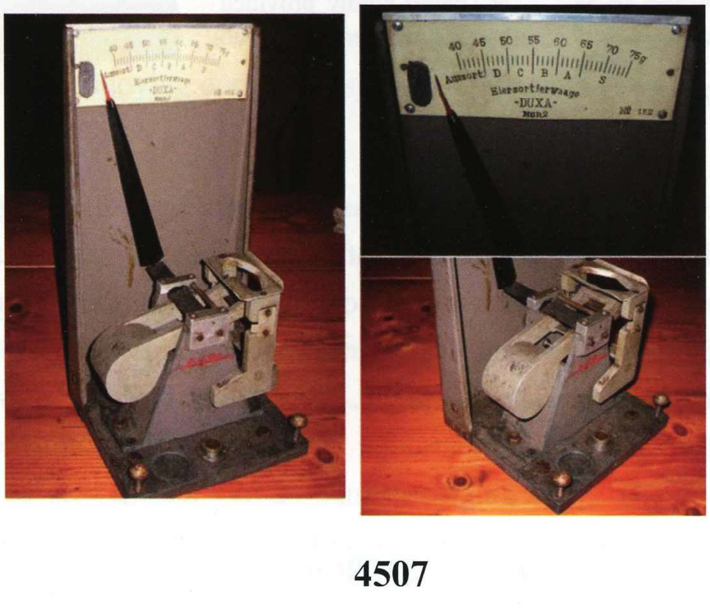


Figure 18. ⋎⋎ Duxa egg scale (Photo taken from the internet in 2009, maker unknown).



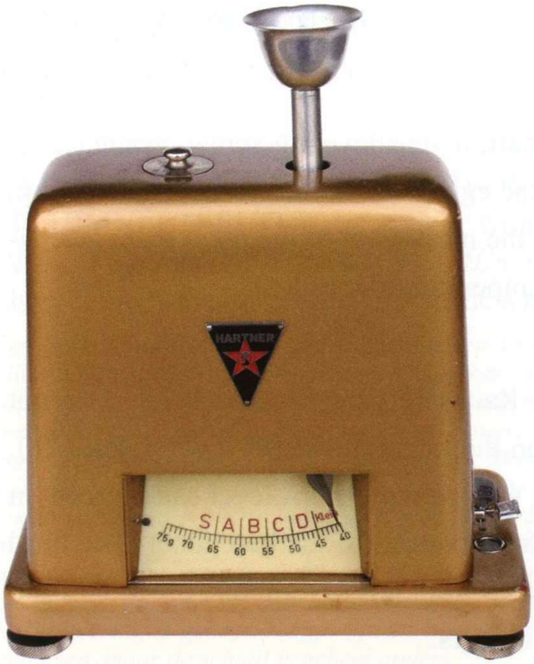


Figure 19a. ▲▲ Hartner egg sorting scale (Photo kindly provided by Jacqueline and Huub Geurts).

The Hartner egg scale (Figure 19a) can still be seen on internet auctions and in the associations' magazines [7, 35]. The schematic drawing (Figure 19b) presented by Rauch delivers the next surprise: this Hartner has an oil damper! On the internet I only saw one copy with a strange little lid on the back. Now it is clear that there is an oil damper behind that lid (Figure 20). According to Walter Rauch the graduation distance is 2 millimeters. The pointer goes from right to left and the scale ranges from 40 – 75 grams. The egg weight classes S, A, B, C, D and E are also on the scale. Colored surfaces at the egg weight classes have not yet been applied to this Hartner. The Hartner has a spirit level on the right and also has two adjustable feet that are on the bottom at the front corners. The control weight of 50 grams sits in a recess on top of the scale house. This egg scale also has knife-edge bearings.

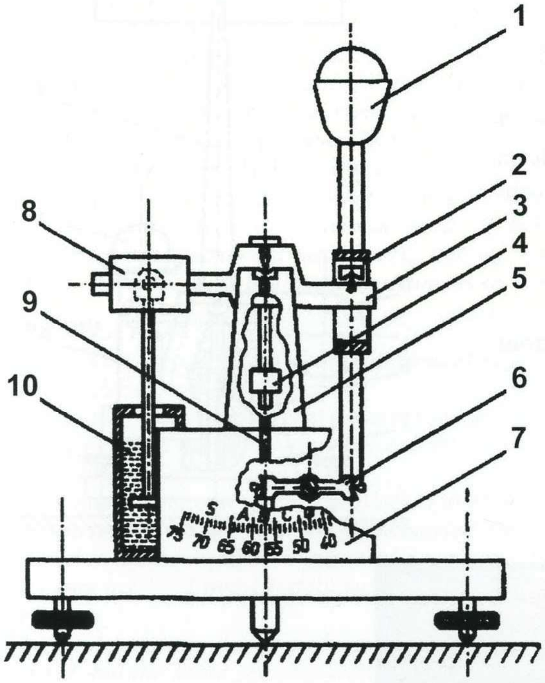
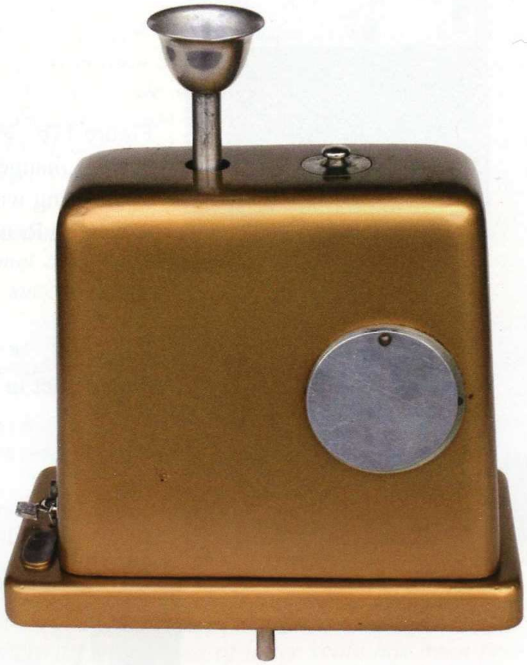


Figure 19b. ◀◀ Parts list: 1. egg holder – 2. hanger – 3. weighing lever – 4. tare weight – 5. stand – 6. knife-edge bearing for levers 7. scale – 8. counterweight – 9. pointer – 10. oil reservoir with damper piston (Figure in accordance with Rauch [2]).

Figure 20. ▶▶ Back of Hartner egg sorting scale with lid to reach oil damper (Photo kindly provided by Jacqueline and Huub Geurts).



The next pictured egg scale, called - Celler Modell – has an adjustable oil damping (Figure 21a and 21b). The reason given for this adjustability is that the viscosity of the damping oil is temperature-dependent and an adjustment is possible with the control. This egg scale also closely resembles the Duxa-Waage: knife-edge bearings, pointer from left to right, control weight, water level, two adjustable feet. The scale ranges from 20 to 80 grams. This egg scale is completely unknown to me. Maybe it was just a prototype at the Rauch Institute?

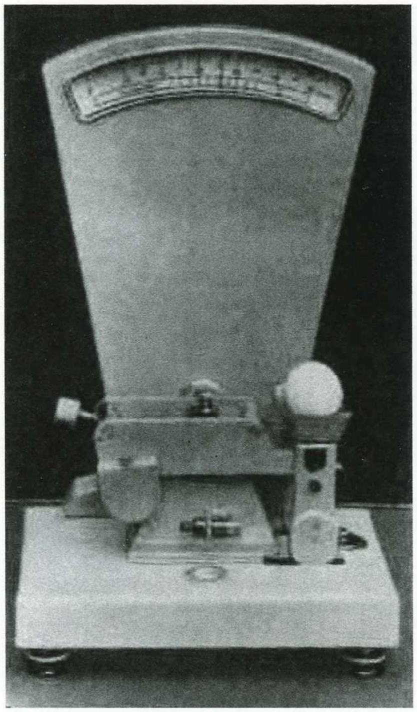


Figure 21a. ◄◄ Egg scale Celler Modell (taken from Rauch [2]).

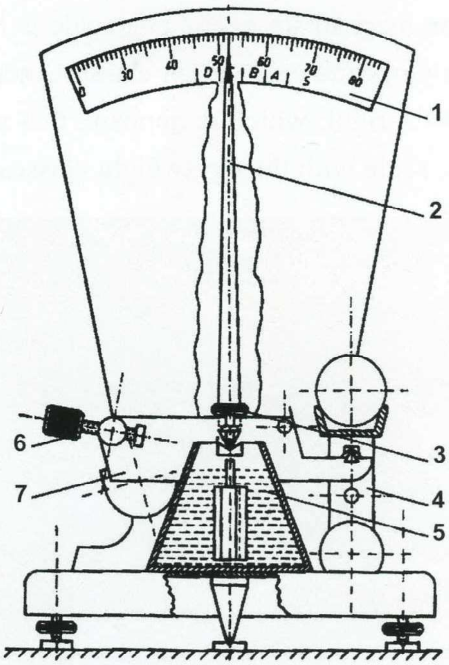


Figure 21b. ►► Parts list: 1. scale – 2. pointer – 3. adjusting knob damping – 4. hanger with egg holder – 5. oil reservoir with damper wing - 6. tare screw – 7. weighing lever (Figure in accordance with Rauch [2]).

Rauch mentions the sensitivity of the egg scales and refers to the Eichordnung of January 24, 1942, in which quality requirements for measuring instruments, a standard for, among others, egg scales are imposed by the state, it was published by the Physical Technical Institute of the State. According to him, an egg scale should have a sensitivity of 100 milligrams, in other words a change of 100 mg should be noticeable on the scale! In the text of the Eichordnung 1942, [16] there is a broader requirement: at the first admission calibration, a change of the burden with 400 mg should cause at least a change of 240 mg on the scale. The first two types of egg scales (pendulum scales and pendulum scales with water damping) do not meet that at all. The egg scales with knife edge bearings would amply satisfy the value required in the Eichordnung with a sensitivity of 100 mg.

From the oil-dampened egg scales are the Hartner and presumably also the Duxa manufactured in series. From this early Hartner with oil damping and also from the Duxa I have only seen one copy on the internet so far.

The egg scales in this group have much less friction thanks to the knife edge bearings and are therefore sensitive enough. They can be calibrated. A relatively short weighing time has been achieved with the oil damping. However, an oil damper is annoying during transport because of the risk of leaking and is temperature-dependent.

The August Sauter Eiersortierwaage (egg sorting scale) with the brand image ASE (Figure 22a) is missing in Rauch's article. This Sauter also has a spirit level, a control weight, on the left a lead plane for the calibration marks and rear left and right adjustment screws. I also saw this egg scale only once, on the internet. I recently found the German patent. It is Gebrauchsmuster DE1440087, the application dates from June 7, 1938 and the patent was issued on July 14, 1938 [37]. The nine drawings in the patent make clear what is probably under the scale housing. I copied the most important drawings and edited them. The Sauter egg sorting scale has – and this is very special - an air damper (Figure 22b). The piston and piston rod are centrally pierced and are fixed on the base plate, the cylinder is pulled up. The damping is set with the screw.

The mechanism of the egg scale is built up with pull rods and knife edge bearings. The scale in the patent only has the egg weight classes; there is no scale in grams. The pointer of the actual egg scale moves from left to right, which is opposite that shown in the patent. The actual scale does have a scale in grams below the scale with the egg-weight classes.

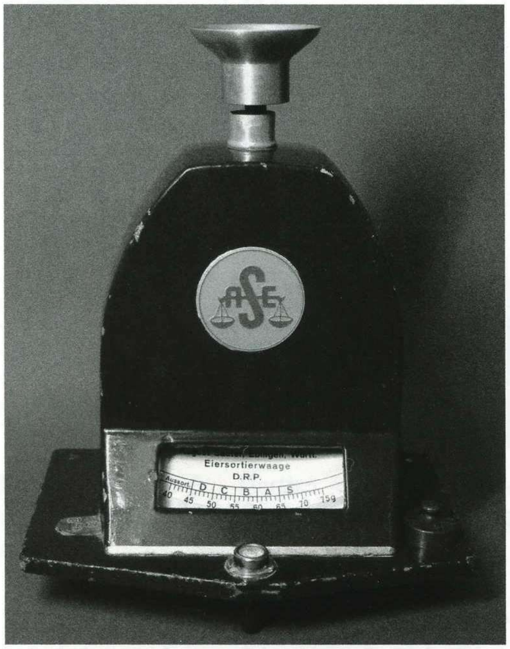


Figure 22a. AA August Sauter egg sorting scale (Photo taken from the internet in 2014, maker unknown).

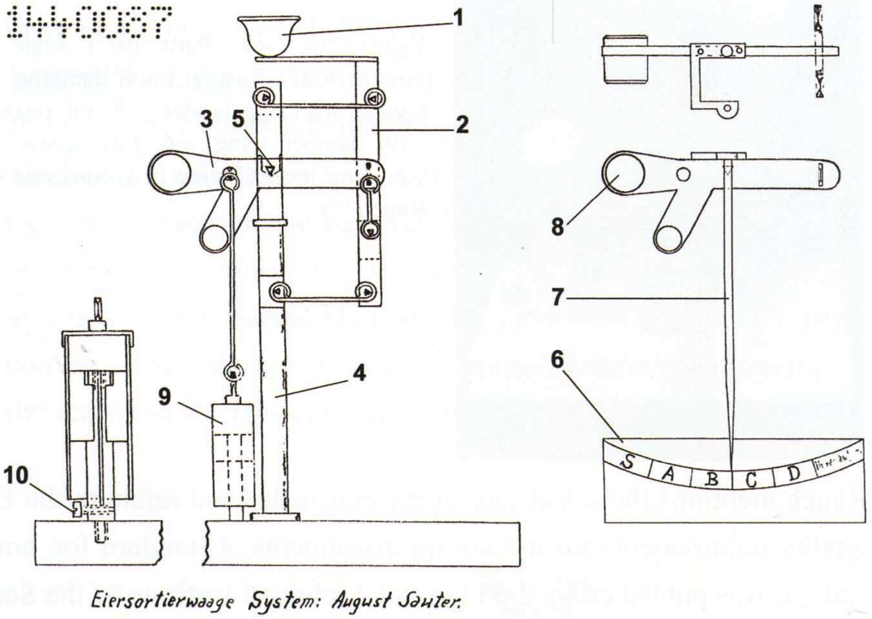


Figure 22b. AA Parts list: 1. egg holder – 2. hanger – 3. weighing lever – 4. stand – 5. knife edge bearing – 6. scale – 7. pointer – 8. counterweight – 9. air damper with fixed piston + piston rod, and moving cylinder - 10. adjustment screw air damper (Figure in accordance with [37]).

Recently I bought this same model egg scale, now with a sticker on the front and back with the logo of Bizerba-ASE (Figure 22c). From Bizerba catalogs, it appears that this logo was used in the period 1936-1950. Then the logo was slightly changed. The ASE logo on the egg scale of Figure 22a with the three letters and a scale dates from the end of 1940. According to Sauter catalogs it was used until 1960. The logo was then slightly changed. On the scale of the Bizerba-ASE is only the text August Sauter, Ebingen, Württ, Eiersortierwaage D.R.P. and the scale number 50193. The mechanism of the Bizerba-ASE (Figure 22d) is different from that of the patent figures. It is clearly more robust with top knife edge bearings and a large compact counterweight. The air damping is also designed differently: the cylinder is fixed and the piston rod with the piston move up and down. The damping control is done with a set screw with cone point, which is only accessible after disassembly of the scale house. The Bizerba-ASE egg scale has in the lead on the base plate calibration marks for the years 1942 - 1959 - 1961 - 1963 - 1965 and the banderole of the calibration office 22/8, which is Eichamt Ebingen. On the 50 grams check weight are the gauges of the years 1939 - 1941 - 1959 - 1961 - 1963 and 1965. The purchased egg scale of Bizerba-ASE lacked the round water level, missed one adjusting foot and the second adjustable foot was bent and the plastic wheel part was crumbled in several parts. The glass for the scale was broken in many pieces. The base plate was rusted and the dark red paint was worn away in many places. This Bizerba-ASE egg grading scale has been completed and somewhat refurbished by me [39].

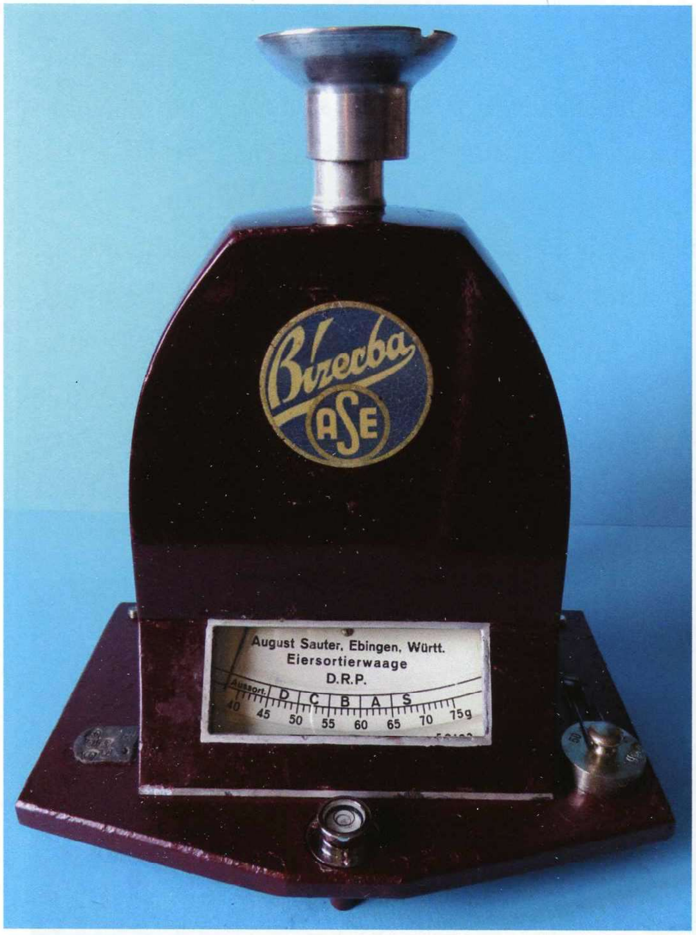


Figure 22c. ▲▲ Refurbished Bizerba-ASE egg grading scale from 1942.

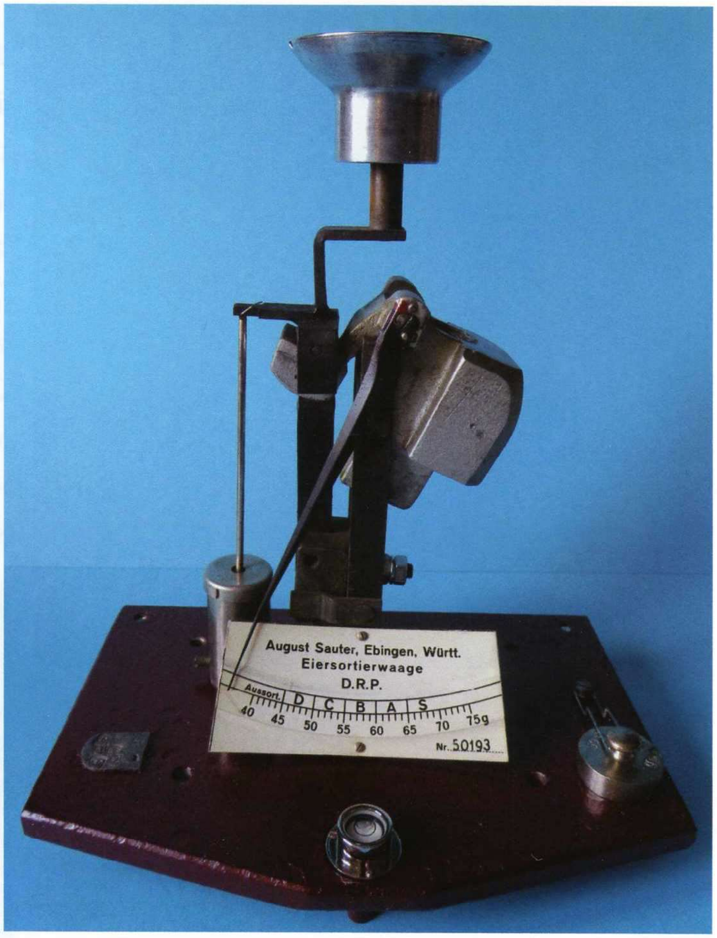


Figure 22d. ▲▲ The mechanism of the Bizerba-ASE egg grading scale with air damper on the left.

Pendulum scales with magnetic damper as egg scale

Due to the high purchase costs (> 100DM) of egg scales with oil damper, a new egg scale was developed at BFAK (BundesForschungsAnstalt für Kleintierzucht = Federal Research Institute for Breeding Small Animals). This resulted in the Celler Eiersortierwaage of Fabian (Figure 23a and 23b). Like the three egg scales described above (the Duxa, the Hartner and the Celler Modell), the Fabian has knife edge bearings, a spirit level, two leveling feet and a control weight (Figure 24).

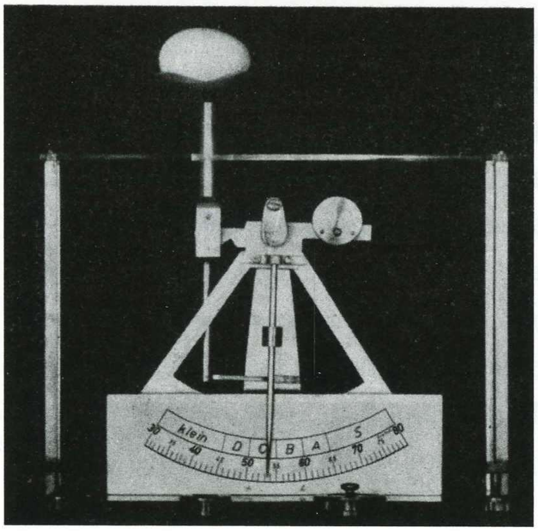


Figure 23a. ◀◀ Prototype of Celler egg sorting scale in Plexiglas housing (taken from Rauch [5]).

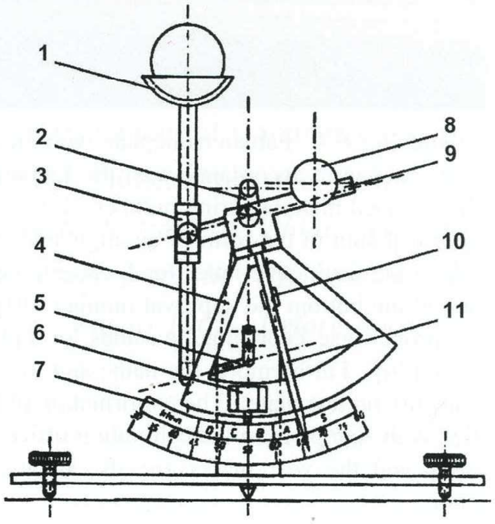


Figure 23b. ▶▶ Parts list: 1. egg holder – 2. stand – 3. hanger – 4. damping segment – 5. lever system as a countersupport with shaft bearing – 6. damping magnet – 7. scale – 8. counterweight – 9. weighing lever – 10. tare weight – 11. pointer (Figure in accordance with Rauch [2]).

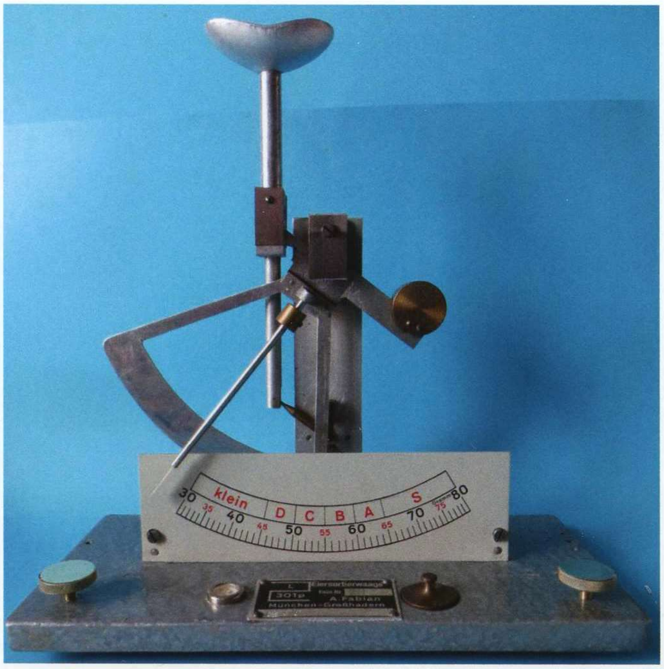


Figure 24. The Fabian egg grader scale without the scale housing.

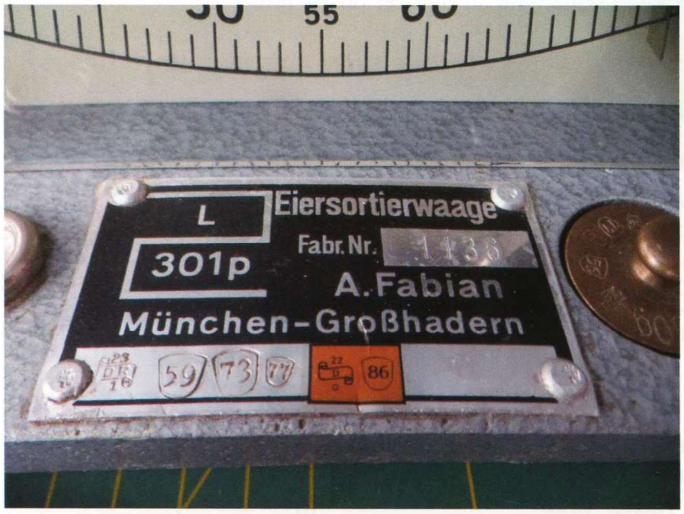


Figure 26. Fabian nameplate with the description Eiersortierwaage in accordance with the Eichordnung 1942, has the stamped manufacturing number 1136, and on the left the approval sign in the form of an angular Z, with the letter L, this is the distinctive letter for Eiersortierwaagen at the top, and at the bottom the approval number 301p. That p stands for probeweise Zulassung, ie stands for a provisional admission. [36]. Furthermore, the name and location of the company are on this plate. The confirmation of the plate is certified with stamps from the calibration office. The calibration mark and the year marks are also on this manufacturer's plate.

Paragraphs 641 through 650 of the Eichordnung specifically concern the egg sorting scales. These regulations largely determine the embodiments, the materials, the weighing ranges, the scale layout (Figure 25), the allowed error limits at first and follow-up calibrations. The location and execution of the approval markings, and also what is on the manufacturer's plate (Figure 26). It is mandatory to have a calibrated 50 grams weight for control per egg scale. That is why the Duxa – the Hartner – the Celler Modell and the Celler Eiersortierwaage of Fabian are similar in many ways.

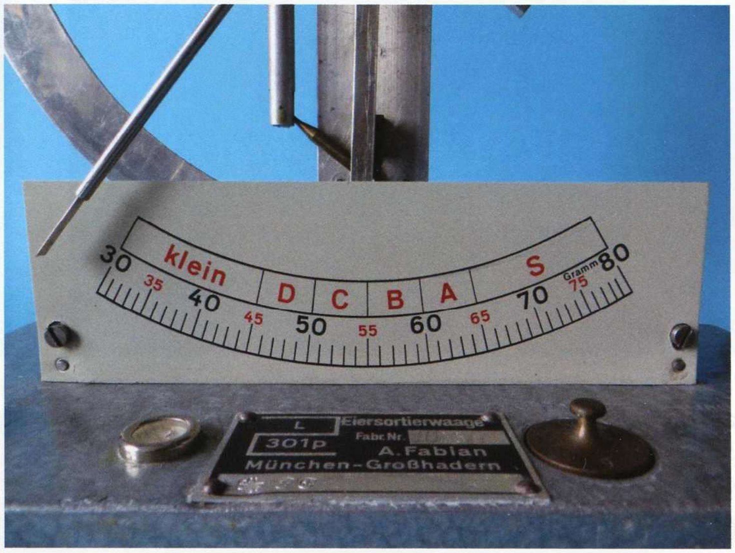


Figure 25. The Fabian scale in accordance with the Eichordnung 1942 (calibration regulations 1942) is the word Gramm at 75 and the scale has a separate scale with the egg weight classes.

The deviating and new feature of the Celler Eiersortierwaage is the type of damping: a magnetic damper has been used (Figure 27 and Figure 28). An aluminum plate part moves along with the weighing mechanism. That plate part moves between the poles of a strong magnet and undergoes a force against direction of the movement. The scale brakes quite quickly and this is done completely independent of temperature fluctuations. The weighing time is significantly shortened: a standstill within 1 second.

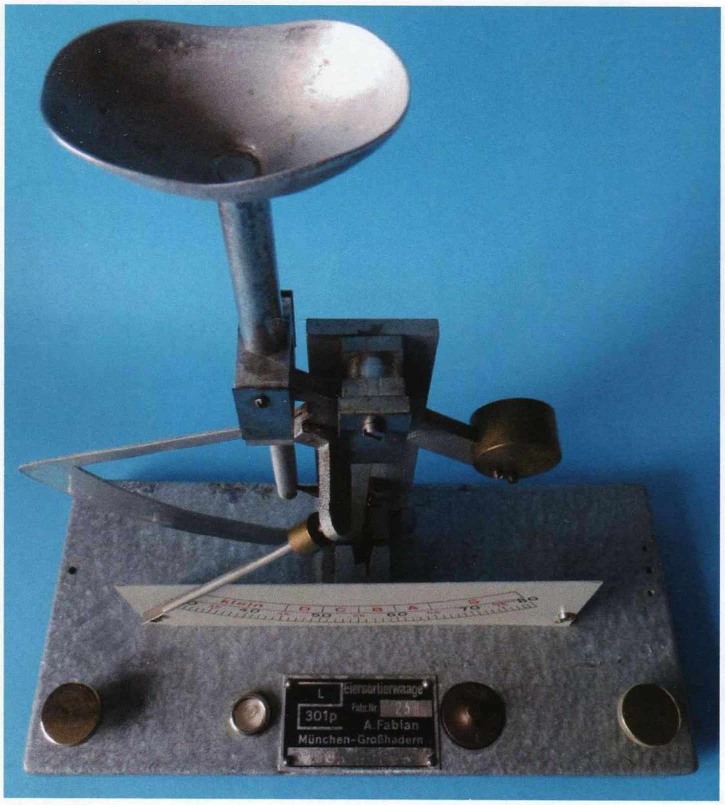
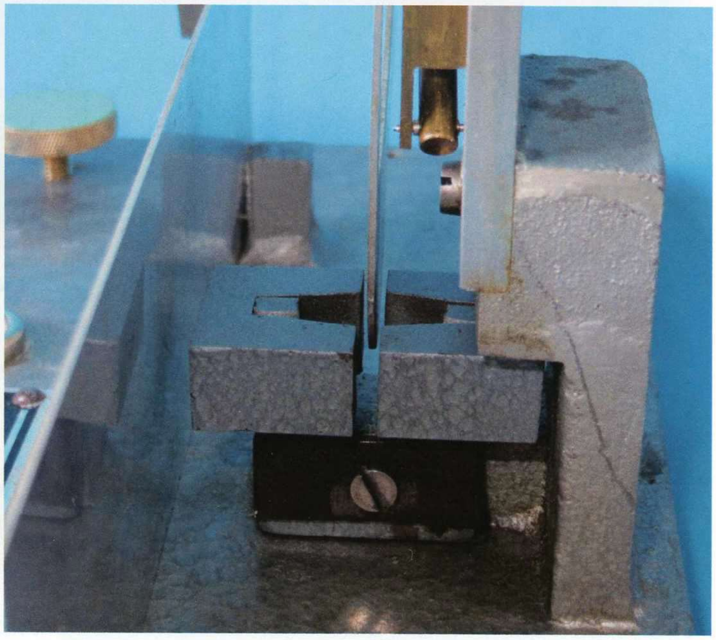
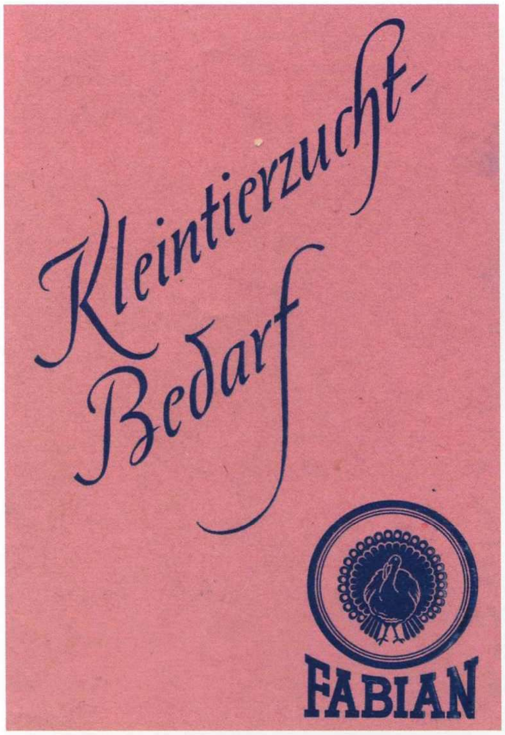


Figure 27. ≺≺ The magnetic damping can be seen at the middle of the base plate behind the scale.

Figure 28. ⋎⋎ The aluminum segment moves freely between the magnets.



The builder of the first prototype is Feinmechanikermeister (fine mechanical instrument engineer) Mr. Kappei. He and also the BFAK are not mentioned in the Gebrachsmuster application [1]. The created prototype is set up in a Plexiglas housing (Figure 24), source [5]. At the end of the article [2] Rauch writes that the serial production is transferred to the firm Fabian. Hence, perhaps the Gebrauchsmuster application was made by August Fabian. The company August Fabian das Fachhaus für die Kleintierzucht und Brutmaschinenbau from Munich – Großhadern, Germany already existed on September 6, 1949 as can be seen from the text at the end of the catalog found (Figure 29) [7]. The company had a different logo in 1949 (Figure 30). At that time, Fabian has Eierwage Just (egg scale model Just) in the assortment. Eierwage still in the old spelling. The spelling change from Wage to Waage was already in force on July 5, 1927 [17]. August Fabian made four further Gebrauchsmuster applications between 1952 and 1962 and in 1952 he obtained a patent on a dough rise cabinet. I did not find the price of the Fabian egg scale, but I doubt that this egg grading scale was for sale for less than 100 DM. Fabian advertises in the breeder's magazine Deutsche Wirtschaftsgeflügelzucht at the end of 1956, and also mentions his 'Celler Eiersortierwaage' (Figure 31). Until what year Fabian sold the egg graders is unclear. It is also unknown, to me, whether the company still existed after 1962. I have inquired at the Industrie- und Handels-Kammer (Chamber of Commerce and Industry = IHK) in Munich who forwarded my questions to Mr. Harald Müller from the Bayerische Wirtschaftsarchiv (Bavarian Business Archive) [18]. His findings: *there is little to trace of Fabian. The firm was registered in the trade register on December 6, 1940, according to a note from the IHK Munich. The firm Fabian is mentioned in the address books of the city of Munich from 1941 to 1962. Before and after that there are no indications for the existence of the Fabian company.*



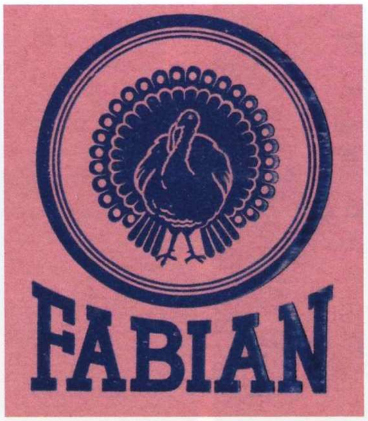
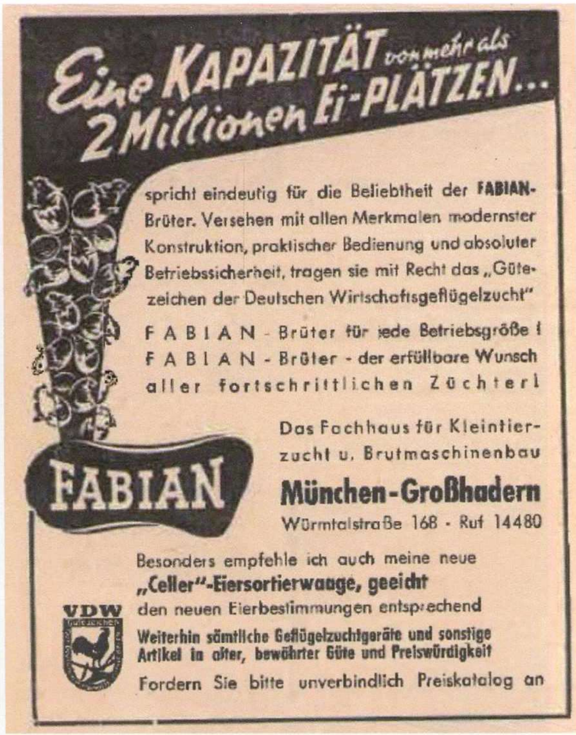


Figure 29. ≺≺ The Fabian 1949 catalog.

Figure 30. ⋏⋏ The Fabian logo in 1949.

Figure 31. ≻≻ Fabian advertisement in Deutsche Wirtschaftsgeflügelzucht from the end of 1956.



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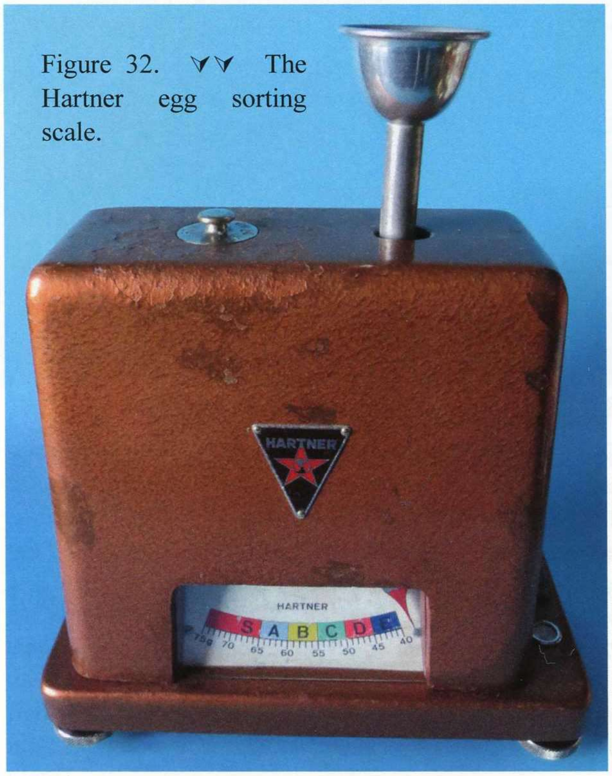
The magnetic damping as in Fabian's Celler egg sorting scale was also used by Hartner in his egg sorting scale (Figure 32, Figure 33, Figure 34). Hartner sold this egg grader until 1981. As can be seen, this later Hartner has colored surfaces in the egg weight classes. This egg scale model was then sold with some changed details by Kern as Eiersortierwaage 552 (Figure 35). Kern did this until the end of 2005 [6]. Now in 2017, among others, Wöhrmann Elektrotechnik und Maschinenbau GmbH sells the last items in stock [19]. The most recent scale shows the current weight class with letter designations XL, L, M and S. These egg scales are no longer admitted for calibration under current legislation.

Figure 32. ⋎⋎ The Hartner egg sorting scale.



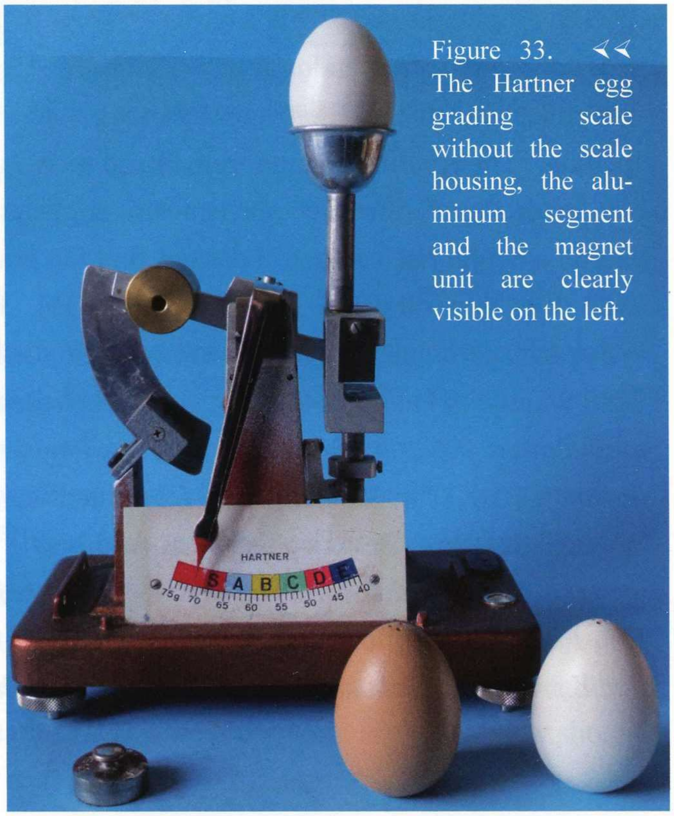


Figure 33. ≺≺ The Hartner egg grading scale without the scale housing, the aluminum segment and the magnet unit are clearly visible on the left.

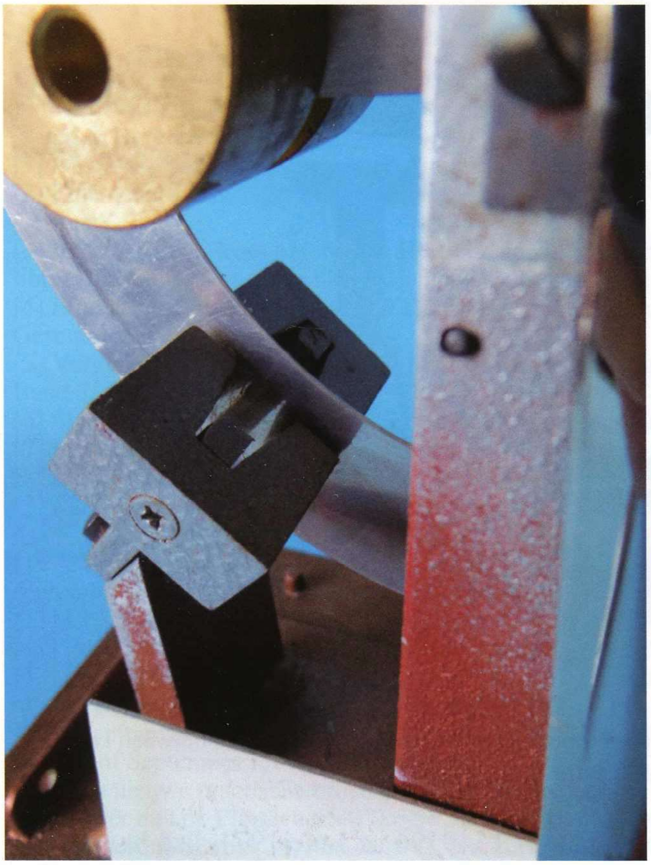


Figure 34. ⩓⩓ The magnetic damping is mounted on a separate stand.

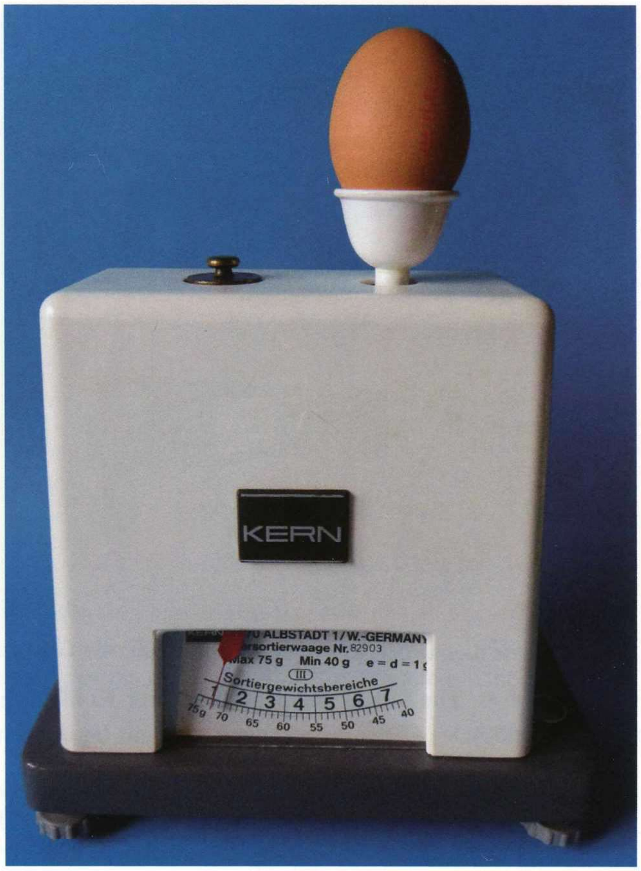


Figure 35. ⩓⩓ The Kern egg grading scale. Here the scale is combined with the mandatory manufacturer's plate.

Magnetic damping

Magnet dampening is based on the Eddy current / Foucault current operation. Various descriptions, illustrations and demonstrations on YouTube about this magnetic damping can be found on the internet. There is a short description in Equilibrium [20]. In it, earlier users of this type of damping are discussed. 1866 A. Cazin, 1895 K. Angström, 1906 Marek. There are several US patents in which magnetic damping is applied in laboratory balances [21, 22, 23, 24]. In the early 1930s magnetic damping was mainly used in American laboratories. In the catalogs of Seederer-Kohlbusch from 1934 [25, 26] a magnetic damper is offered under the name SEKO, it was optional on several balances (Figure 36). The SEKO is based on US patent 1,900,641 from J. Gattoni in 1933 [24]. A Sartorius balance also has a magnetic damper [27]. The German company Sauter has also applied magnetic damping in balances over a period of years [28]. In 1973 it was also used in a particularly sensitive letter and parcel scale from Sauter, type S 2000/1-B [29]. Kurt Beyreis wrote a review article with more examples in Equilibrium entitled *Damping Scale Balances over 5000 Years* [30]. In 2016, magnetic damping is still applied in balances from the American company Ohaus [31]. Among others in the Cent-o-gram balance 311, on the end of the balance arm on the right (Figure 37), in the Dial-o-gram 1650 and in the Triple beam balance 750-SO. Ohaus reports in a historical overview that in 1963 they were the first company to apply the magnetic damping in cheap recharging products. German manufacturers, such as Phywe [30] also apply magnetic damping in balances that are used in higher education.

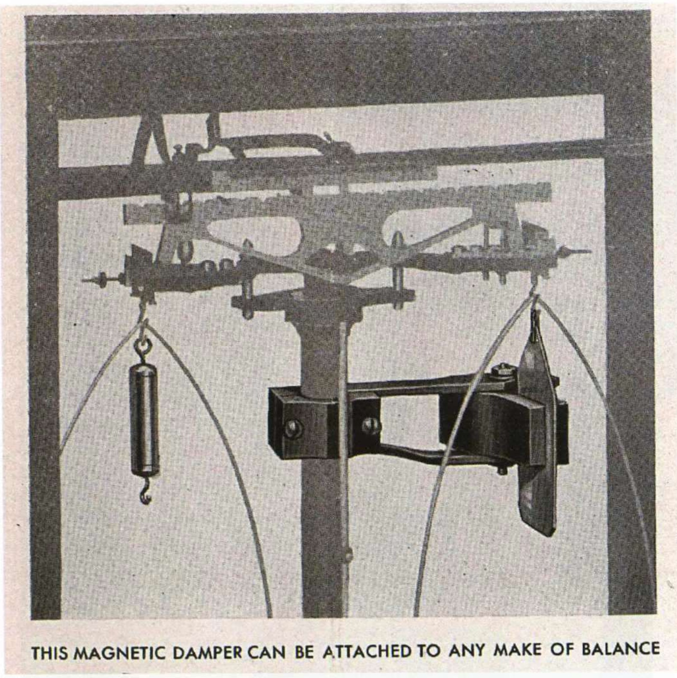


Figure 36. ▲▲ The SEKO damper of Seederer-Kohlbusch on a balance.

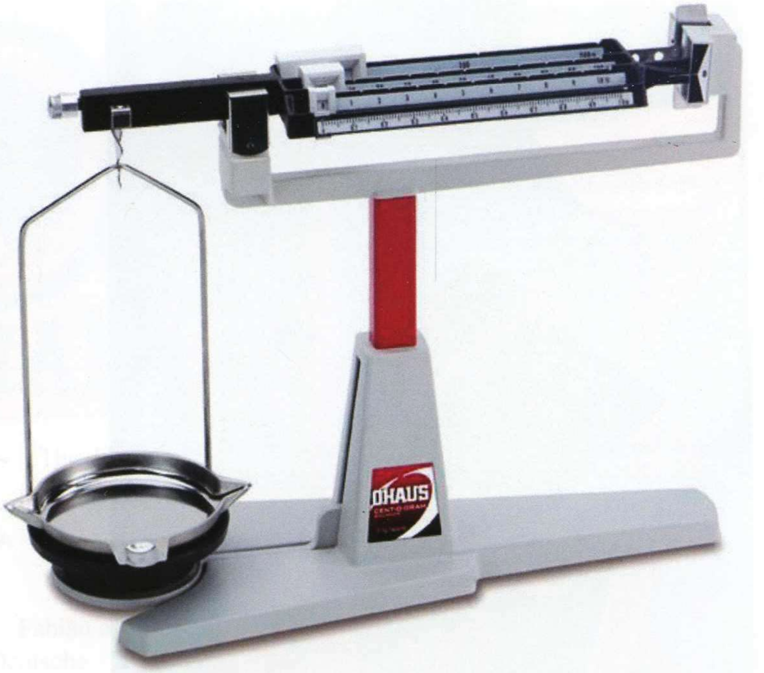


Figure 37. ▲▲ The Cent-o-gram balance 311 of Ohaus. On the right, the aluminum end of the balance arm moves between two magnet parts in the scale frame.

The Hartner B 500 and B 1000 letter scales built according to patent DE1549196 of June 1971 also have magnetic damping. Here a copper plate moves between the permanent magnets. This model letter scale was later also supplied under the brand names Bizerba, (Jakob) Maul, Pitney Bowes, Prior and Eba [38].

Conclusions

Partly thanks to the sticker with the name Fabian and the text Celler Eiersortierwaage more about the background of this egg scale has been found. The Fabian is a special egg sorting scale because of its magnetic damper. The Hartner egg scale with magnetic damper has remarkably remained in production much longer. It is unclear how Hartner got his magnetic damping. Through an acquisition of Fabian? Or by simply copying the idea?

The documentation database of R.J. Holtman is a wonderful source for finding historical data, here focused on the subjects German egg scales and magnetic damping.

Today, the digital scale is a better and much cheaper alternative for the small breeder of chickens or ducks. At large egg producing farms mechanical egg scales have been completely replaced by large, fast egg-sorting machines with enormous capacities.

More pictures of the egg scales can be found on my internet pages: the Fabian [32], the Hartner [33], a simple egg scale of Ph.J. Maul [34], the Ph.J. Maul egg scale with colored scale [8] and the Bizerba-ASE egg [39].

Note:
This article is still to be published in the Journal of the Dutch Society of collectors of Weights & Measures. In Dutch: Meten & Wegen. It was translated and slightly edited by the author.

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Letter Opener Scales, Part 4

BY JAN BERNING

One of the most plentiful letter opener scales ever marketed is the Linex. US Patent number 2,612,365 (Figure 45) was issued to Frede D. Nielsen of Denmark on Sept. 30, 1952 and German patent number 865,216 was issued to Nielsen on Feb 3, 1953. Made of plastic, these bismar letter opener scales can be found graduated in ounces or grams with a ruler in inches or centimeters.

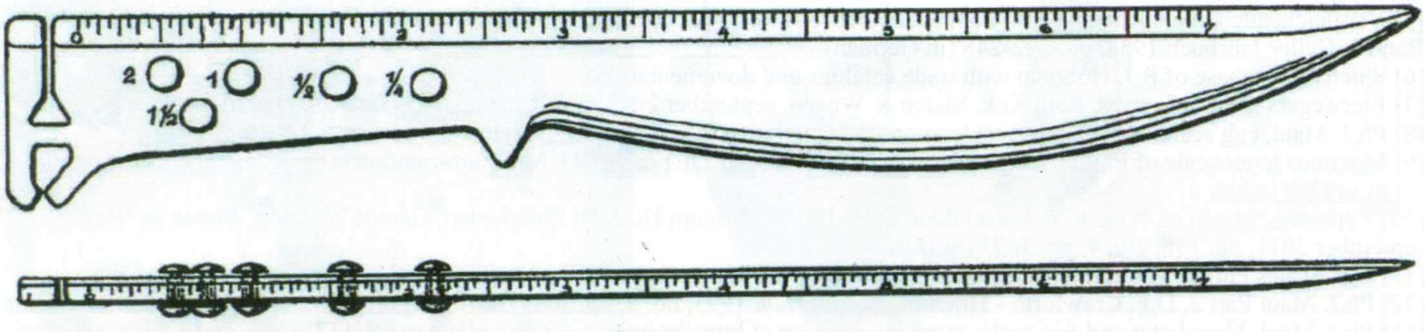


Figure 45. ▲▲ US patent number 2,612,365 and German patent number 865,216 are identical except for the numerals on the beam.

Most Linex scales are cream colored plastic, but clear, green, yellow, white, red and gray were also produced. To weigh a letter, place it between the clip at the lower butt end of the letter opener and place the buttons between the thumb and forefinger until equilibrium is reached. These scales appear with 4 or 5 plastic buttons which can be red, white, blue or black. They were manufactured in the US, Denmark, Hong Kong and Canada among other countries.

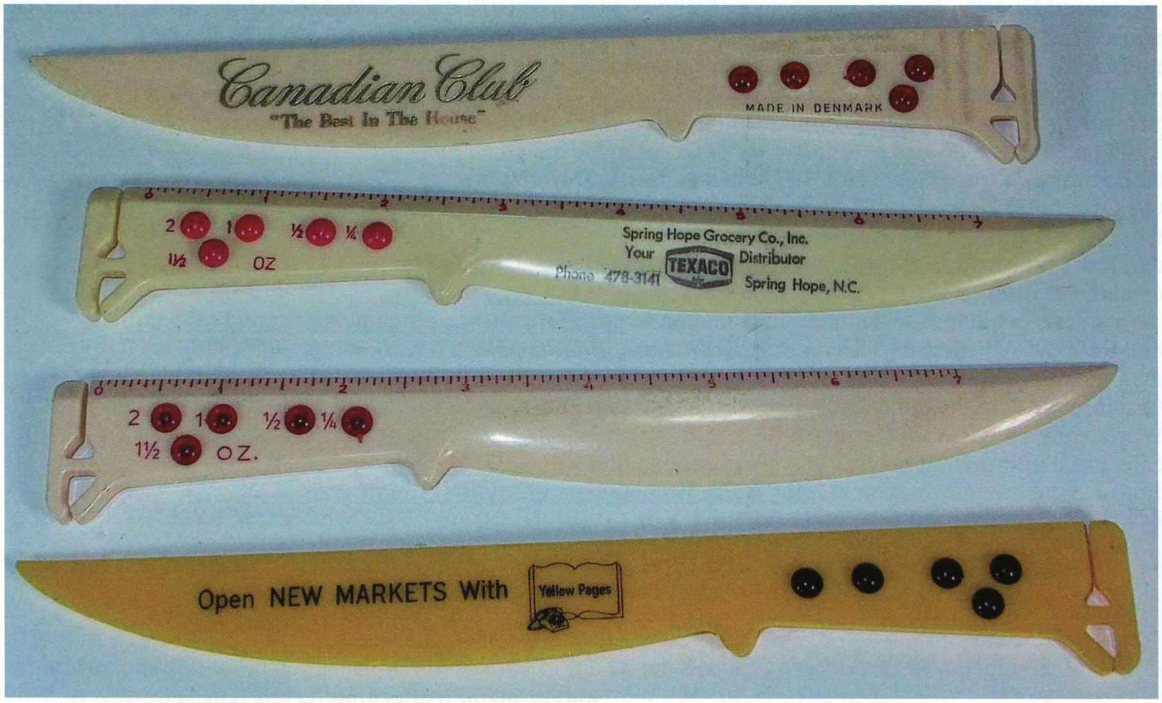
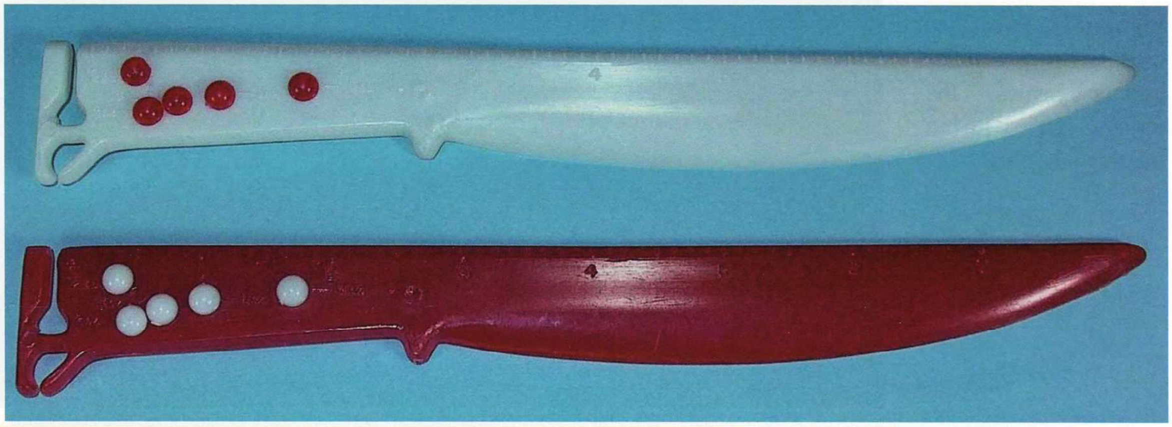


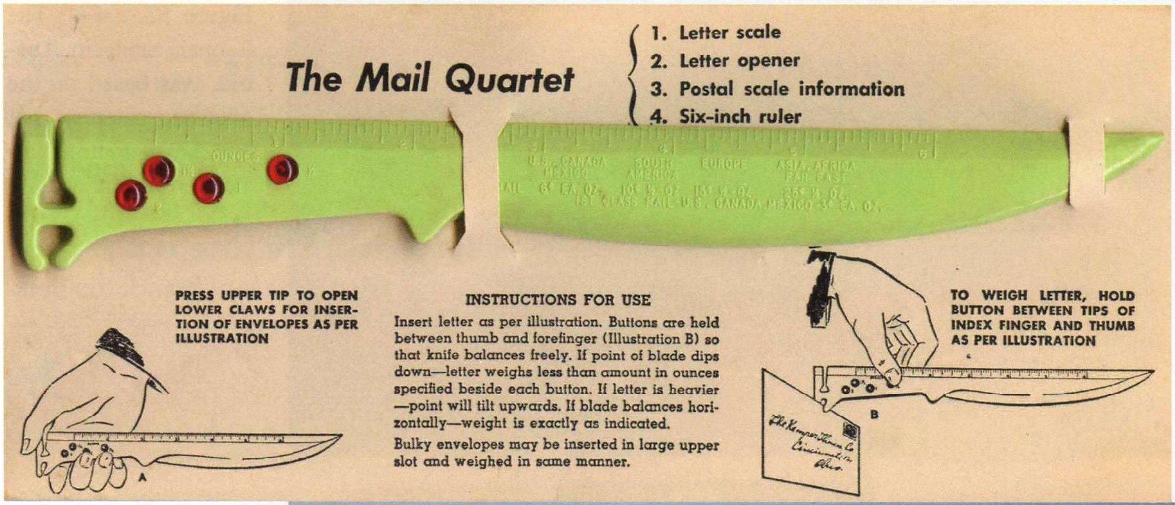
Figure 46. ◀◀ Four Linex Letter opener scales top to bottom:

1. Cream Linex with red buttons and advertising on back. Made in Denmark.
2. Cream with red buttons and advertising on front.
3. White with no advertising.
4. Yellow with black buttons

The two center examples show clearly the 7 inch ruler.

Figure 47. ➢➢ White and red Linex letter opener scales. The five button Linex letter scales weigh 5 different letter weights.




OUNCES
U.S., CANADA MEXICO
SOUTH AMERICA
EUROPE
ASIA, AFRICA FAR EAST
AIL 6¢ EA. OZ. 10¢ ½ OZ. 15¢ ½ OZ. 25¢ ½ OZ.
1ST CLASS MAIL U.S., CANADA, MEXICO 3¢ EA. OZ.
A
B

The Mail Quartet

1. Letter scale
2. Letter opener
3. Postal scale information
4. Six-inch ruler

PRESS UPPER TIP TO OPEN LOWER CLAWS FOR INSERTION OF ENVELOPES AS PER ILLUSTRATION

INSTRUCTIONS FOR USE

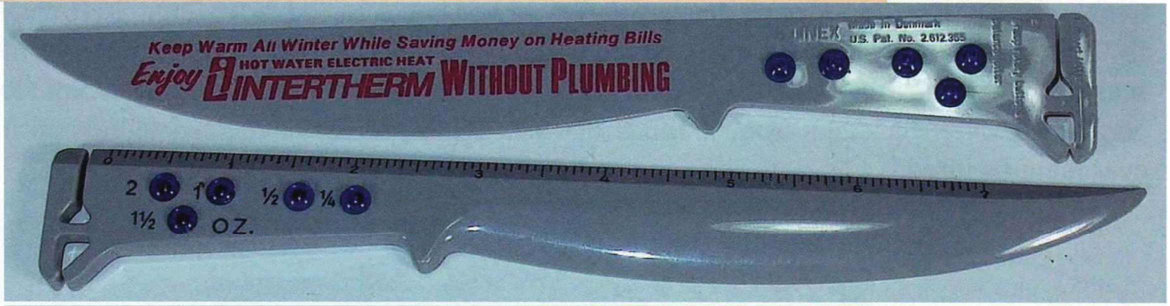
Insert letter as per illustration. Buttons are held between thumb and forefinger (Illustration B) so that knife balances freely. If point of blade dips down—letter weighs less than amount in ounces specified beside each button. If letter is heavier—point will tilt upwards. If blade balances horizontally—weight is exactly as indicated.

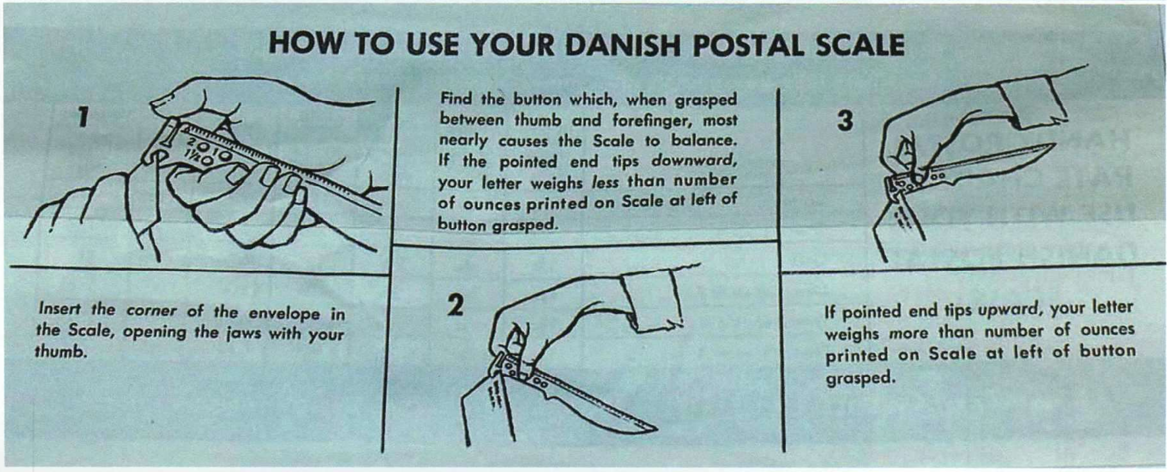
Bulky envelopes may be inserted in large upper slot and weighed in same manner.

TO WEIGH LETTER, HOLD BUTTON BETWEEN TIPS OF INDEX FINGER AND THUMB AS PER ILLUSTRATION

Figure 48. ≺≺ A green Linex letter opener scale with its original card showing use instructions. This version only has 4 buttons and thus only weighs letters of 4 weights.

Figure 49. ➢➢ Two gray Linex scales with blue buttons, one with advertising on the back. The instructions that were included with the lower one refers to it as a *Danish Postal scale.*


Keep Warm All Winter While Saving Money on Heating Bills
Enjoy INTERTHERM HOT WATER ELECTRIC HEAT WITHOUT PLUMBING
LINEX
U.S. Pat. No. 2.612.355
2
1
½
¼
1½
OZ.



HOW TO USE YOUR DANISH POSTAL SCALE

1

Insert the corner of the envelope in the Scale, opening the jaws with your thumb.

Find the button which, when grasped between thumb and forefinger, most nearly causes the Scale to balance. If the pointed end tips *downward*, your letter weighs *less* than number of ounces printed on Scale at left of button grasped.

2

3

If pointed end tips *upward*, your letter weighs *more* than number of ounces printed on Scale at left of button grasped.

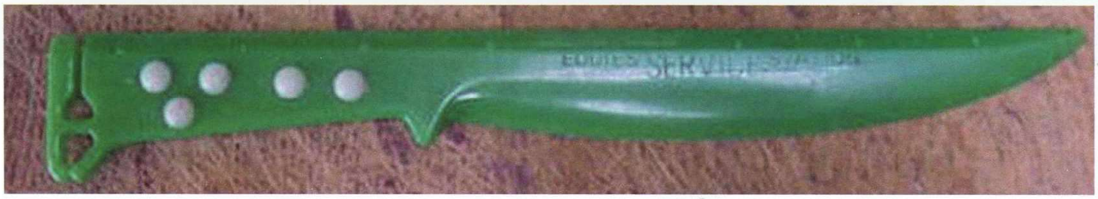


Figure 50. ≺≺ A rare dark green Linex.

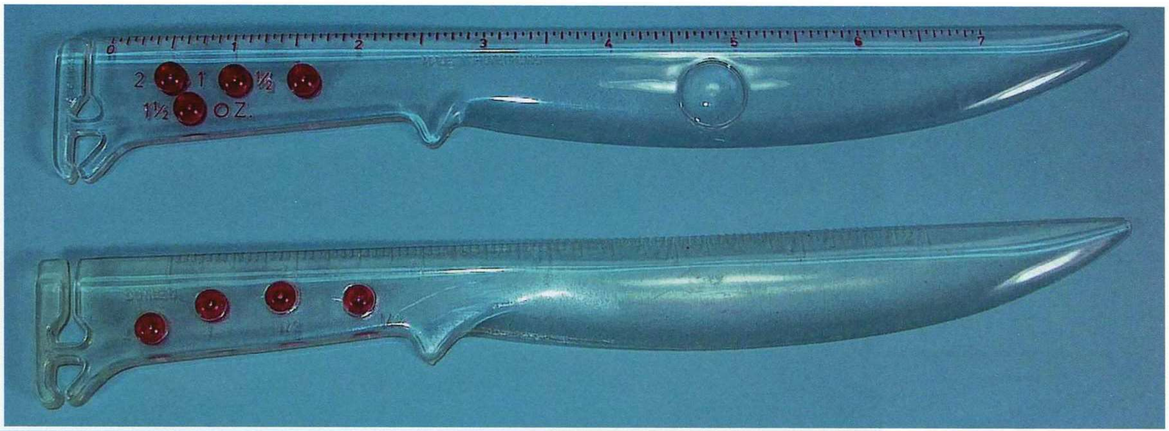


Figure 51. ≻≻ Two clear Linex letter opener scales, the upper one with a magnifying glass.

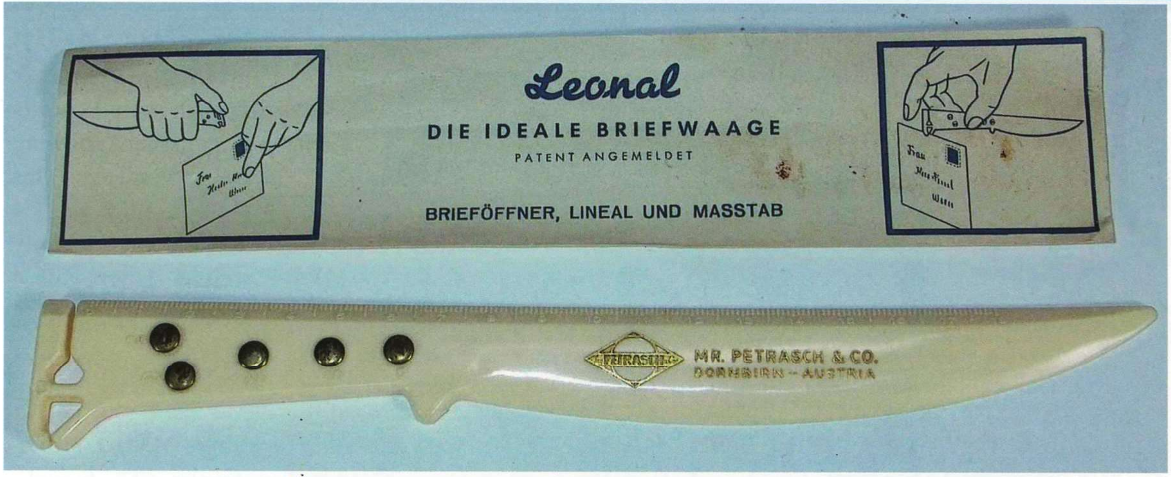


Figure 52. ≺≺ The Leonal, made in Austria, was based on the Nielsen patents, but had brass buttons instead of plastic ones.

On November 16, 1954, design patent number 173,518 was issued to William Steltzer of Summit, New Jersey for a *Combined Postal Scale and Letter Opener*. No instructions were included in the design patent. The scale had two sides for weighing and letters were to be balanced on edge in different slots with the user's fingertips. It weighed letters from ½ to six ounces. No examples have been found and it is unknown if it was ever manufactured.

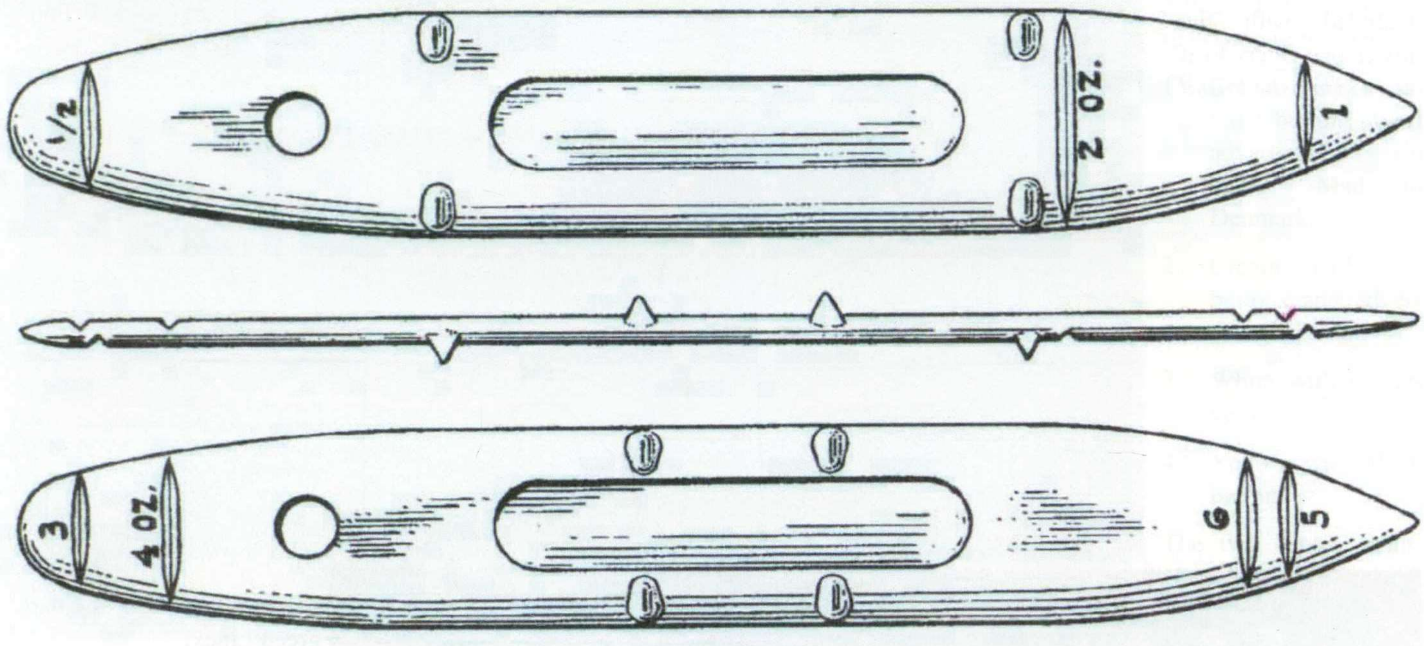


Figure 53. ⋀⋀ The drawings of Stelzer's design patent number 173,518 show that letters of ½, 1 and 2 ounces were weighed on one side and those of 3, 4, 5, and 6 were weighed on the other. It is a table-top rocker.

Horace L. Walborn of Jackson, Michigan was issued design patent number 175,995 on November 1, 1955 for a *Combined Letter Opener and Balance.* A simple rocker, the letter would be inserted into a slot at the end of the letter opener. The blade acts as a counter weight and the pivot can be seen at the center. No example has been seen.

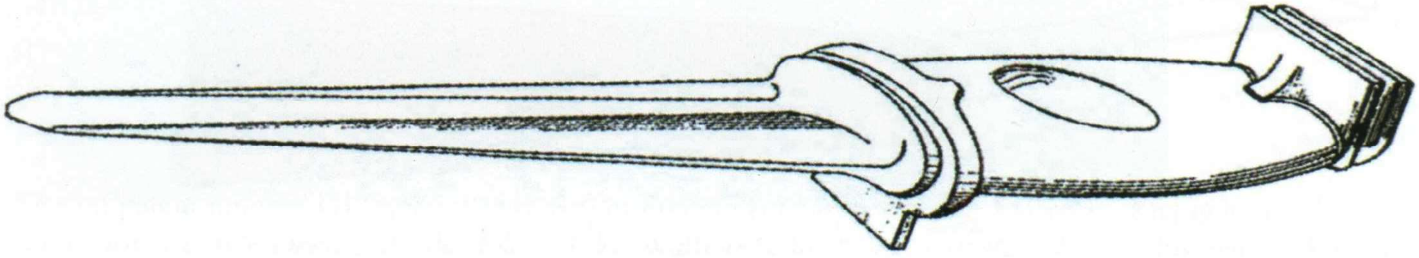


Figure 54. ▲▲ Waldron's patent D175,995 issued Nov. 1, 1955.

Walborn was issued an additional patent number D176,048 on Nov. 8, 1955 for a *Combined Letter Opener and Balance.* A simple rocker, the letter would be inserted into a slot at the end of the letter opener. This letter opener scale was manufactured in different finishes including copper, brass and chrome. They were also combined in a set with a pair of scissors, a leather case and with various advertising.

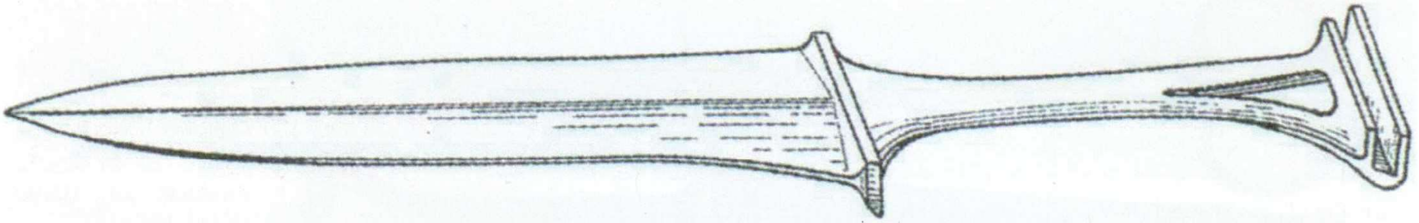


Figure 55. ▲▲ Walborn's patent D176,048 was issued Nov. 8,1955. It was marketed as Mailway.

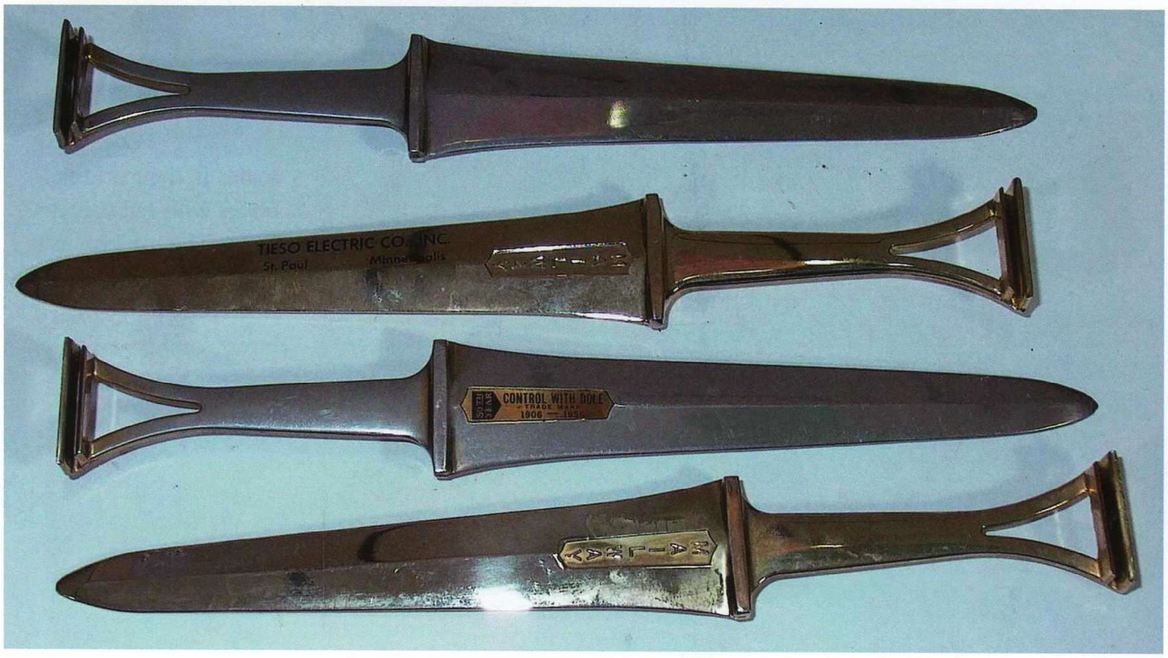
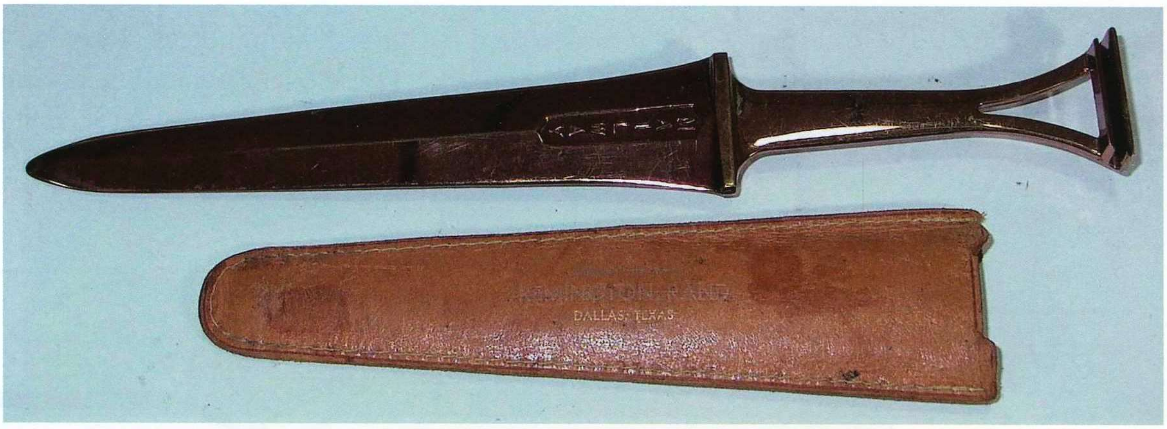


Figure 56. ◀◀ Four Mailway letter opener scales as follows top to bottom:

1. Unmarked Pat. Pending
2. Marked Mailway with advertising on center of blade.
3. Advertising metal plate inserted at top of blade
4. Marked Mailway with no advertising.

Figure 57. ➢➢ A marked Mailway with its own leather sheath.



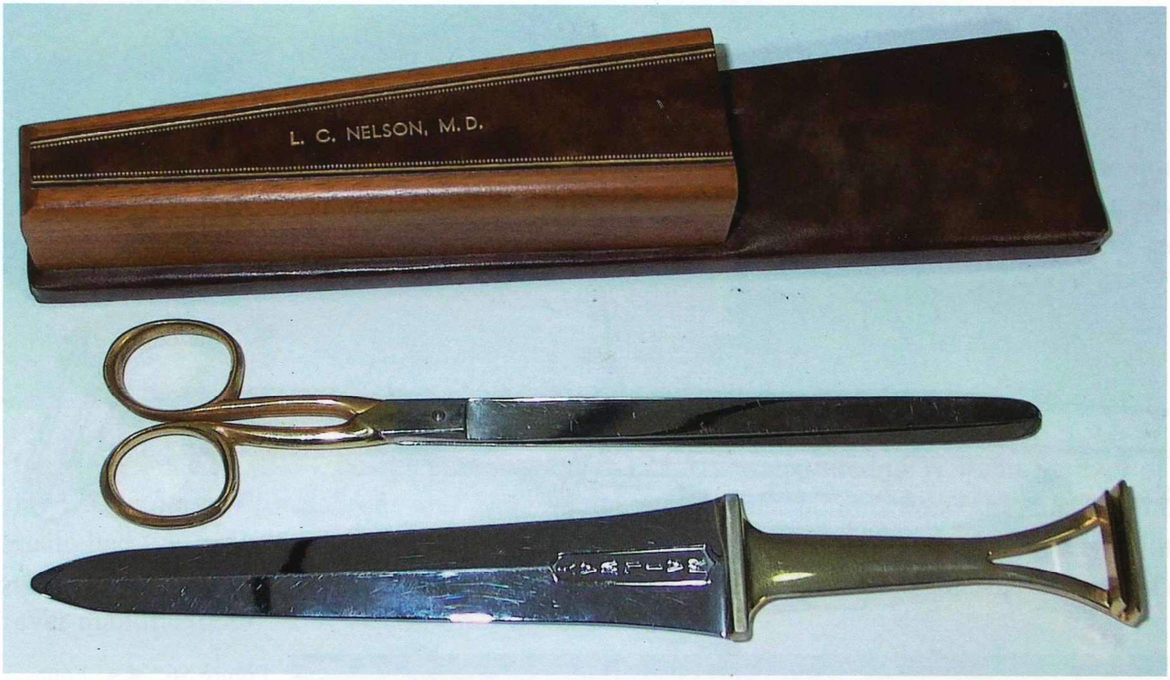


Figure 58. ⮜⮜ A set containing a pair of scissors and a Mailway letter opener scale in a wood and leatherette advertising case. The top of the scissors and Mailway are plated with a gold colored wash.

All of Walborn's patents for Letter Openers were assigned to Walmann Products of Battle Creek, MI.

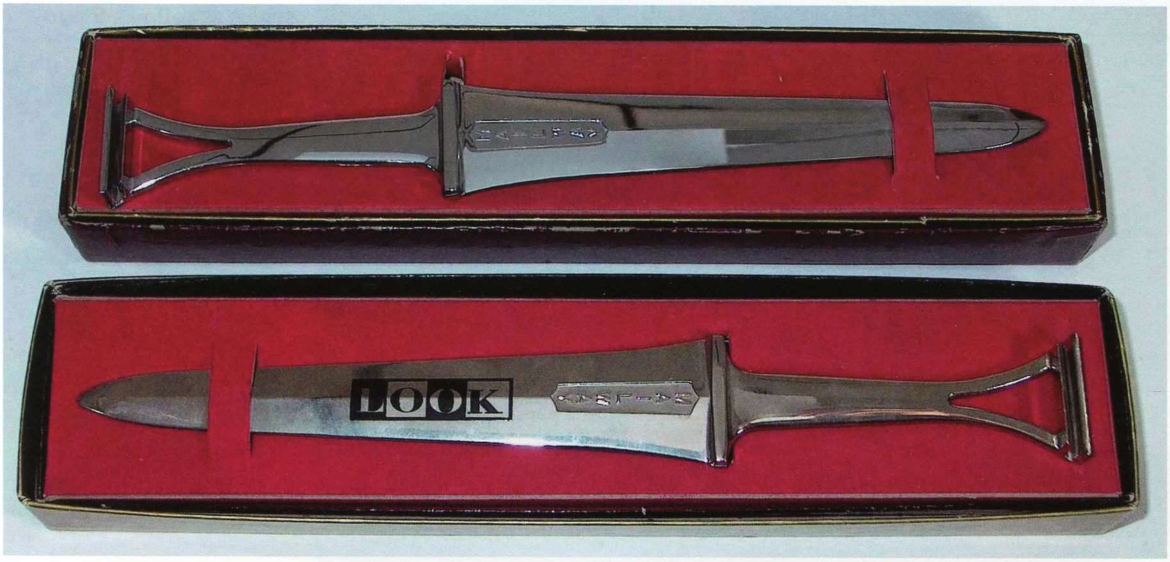
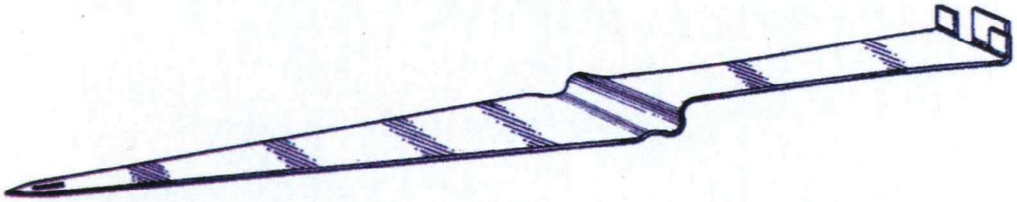


Figure 59. ⮜⮜ Mailway letter opener scales in their original boxes with red velvet liner. The top box is burgundy on the outside while the lower box is gold foil. The boxes are unmarked.

Walborn's third patent was number D178,437, issued on July 31, 1956 for a simple rocker type letter opener scale. Even simpler than the Mailway, no example of this rocker has been found.

Figure 60. ➢➢ Walborn's patent number D178,437.



Design patent number D178,685 was issued to Frederick J Melges of Battle Creek, Michigan, on Sept. 4, 1956, for a *Letter Opener or the Like*. Like Walborn's three letter opener scales, this patent drawing shows a rocker type letter opener scale with a slot at the end of its handle to receive a letter.

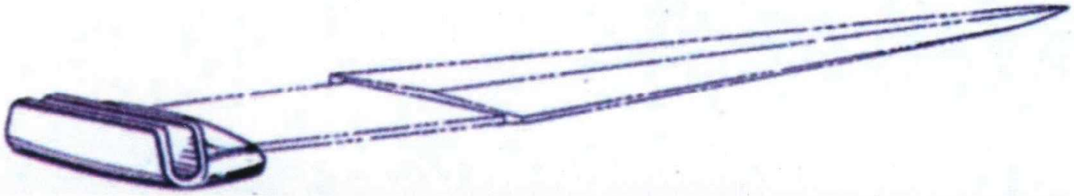
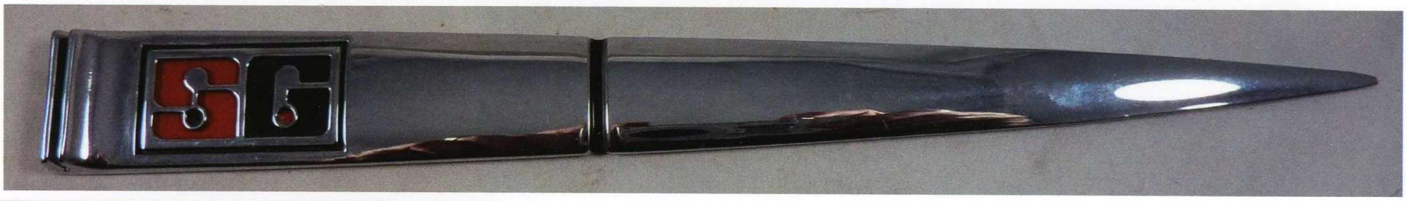


Figure 61. ⋖⋖ Melges' patent D178,685, was issued on Sept 4, 1956 and assigned to Walmann Products of Battle Creek, MI.



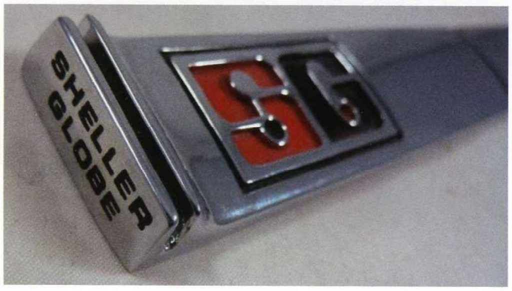
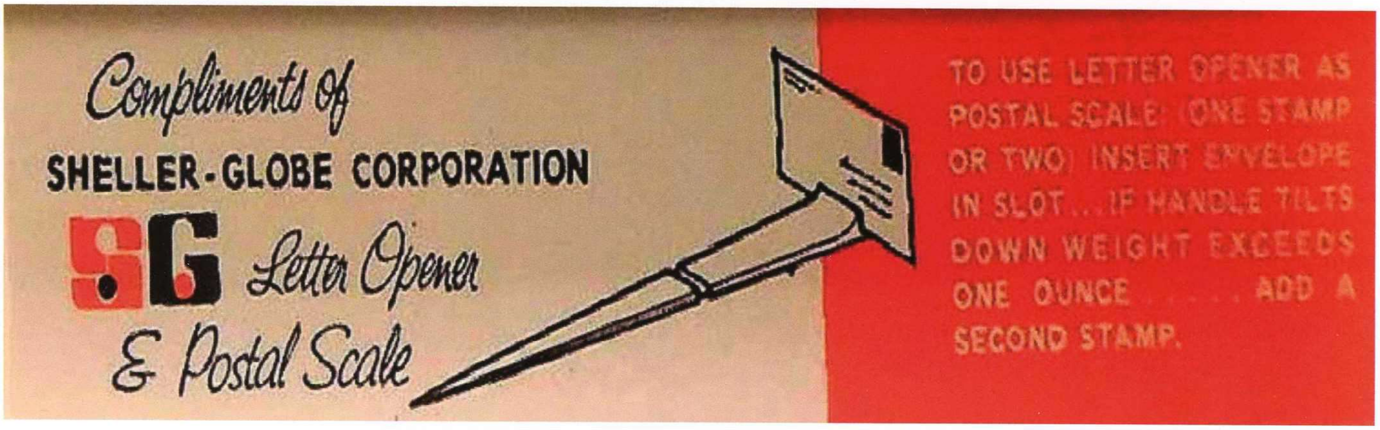


Figure 62. ⋖⋏ It is thought that this Sheller Globe letter opener scale is similar to Melges' patent, but Sheller Globe was not in business until 1966. This scale was made post 1966 and measures $9^1/_8$".

Figure 63. ⋎⋎ This label was inside the box in which the Sheller Globe letter opener scale was shipped..



Compliments of

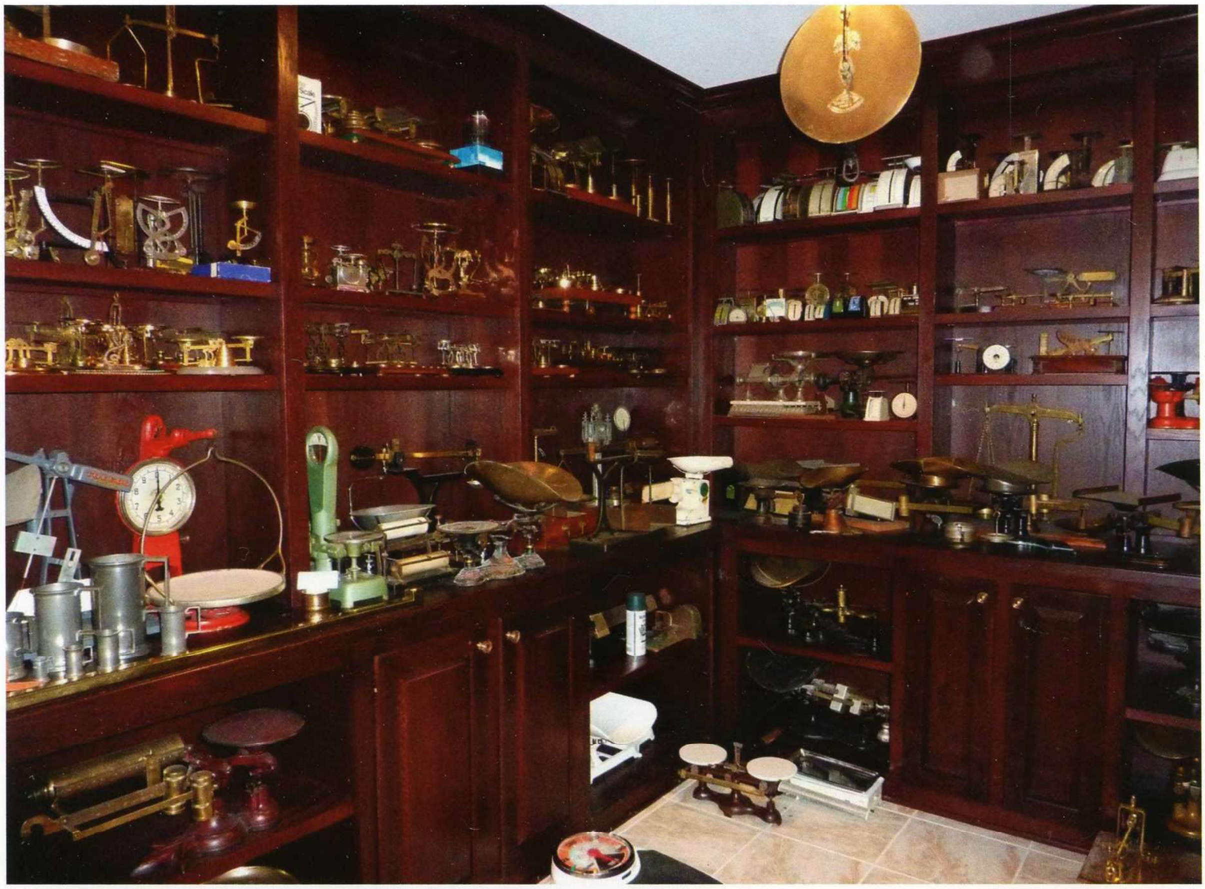
SHELLER-GLOBE CORPORATION

SG Letter Opener

& Postal Scale

TO USE LETTER OPENER AS POSTAL SCALE (ONE STAMP OR TWO) INSERT ENVELOPE IN SLOT ... IF HANDLE TILTS DOWN WEIGHT EXCEEDS ONE OUNCE ...... ADD A SECOND STAMP.

How Members Display Their Collections



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EQUILIBRIUM

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2018 ISSUE NO. 4

PAGES 4525 - 4552

Cover Picture

This hefty desk set has a gilded Ball & Rod scale at its centre. Either side sit a candlestick and a plate, probably to take a cut-glass inkwell. The maker did not put his name on it, but, by reading the articles in this issue and the next issue, he will be identified.

Only two examples are known. It is 260 mm across and weighs about 5 kg. How many buyers had a desk so large and strong that they could buy such a massive piece?

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Who Made These Ball & Rod Postal Scales? Part 1

BY DIANA CRAWFORTH - HITCHINS

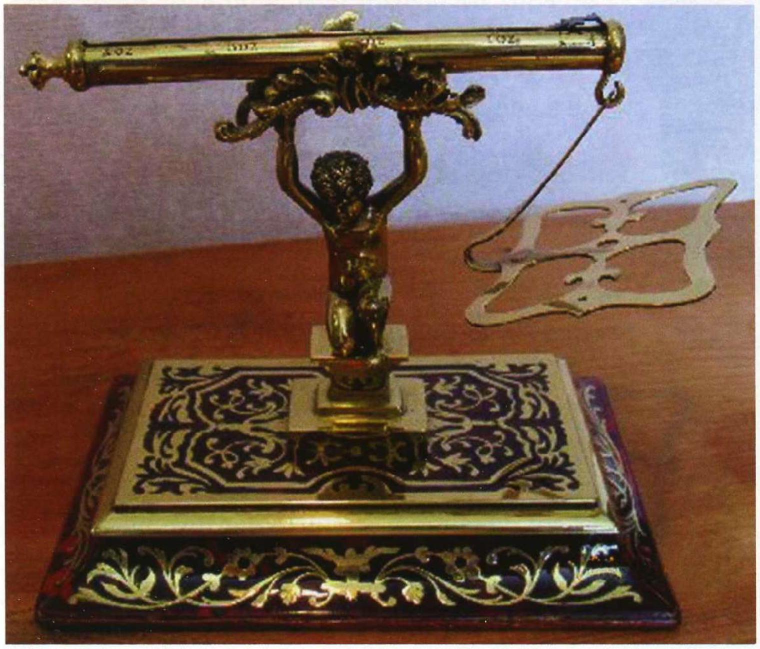


Figure 1. ᗑᗑ

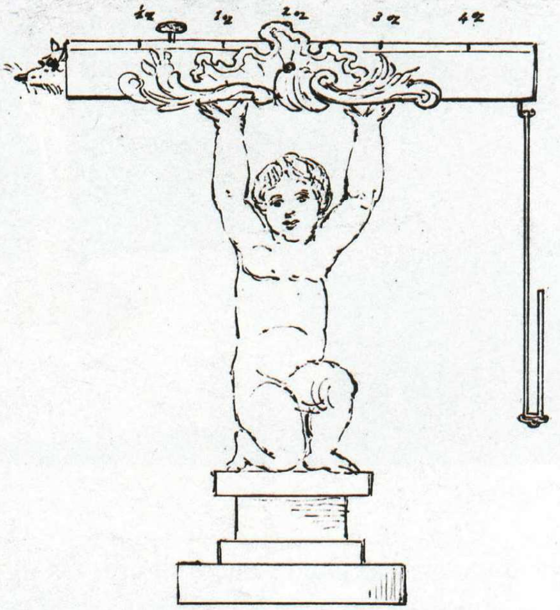


Figure 2. ᗑᗑ

The earliest ball & rod scale that we know of does not even have a ball & rod mechanism! It is the boy scale, Figure 1, registered design number 130, of 20th December 1839, giving four year's protection. See Figure 2. Henry Benjamin Wright registered the design, while living at 44 Upper Marylebone St, London, that was a Livery Stables. Was he living above the Stables? He was no engineer, as the graduations have the heaviest one (4oz) nearest the letter rack, and the lightest furthest away from the letter rack. Not possible! But he thought of having the poise in the form of a rod within a tube, supported by a charming boy. This design was immensely popular, and has been seen with many variations of base, rack and placing of patination or gilding. The earliest examples have "H B WRIGHT, No.130, LONDON" on the base, so presumably they were made under his instruction by a brass founder. As the mould used for the boy and for the foliate support remained the same throughout, presumably there was no change of founder, even after Wright relinquished his design.

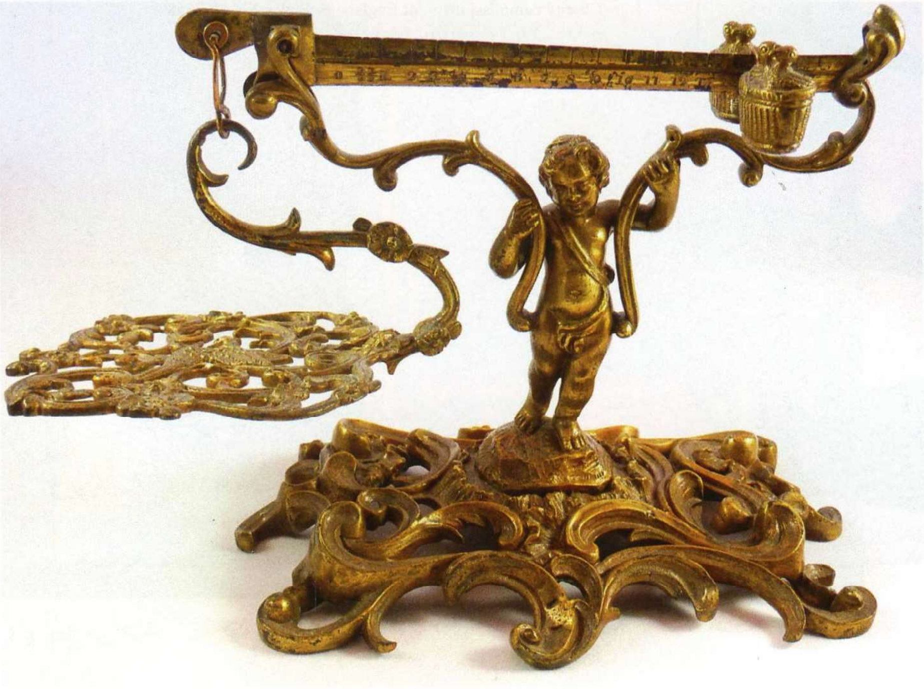


Figure 3. ᗑᗑ

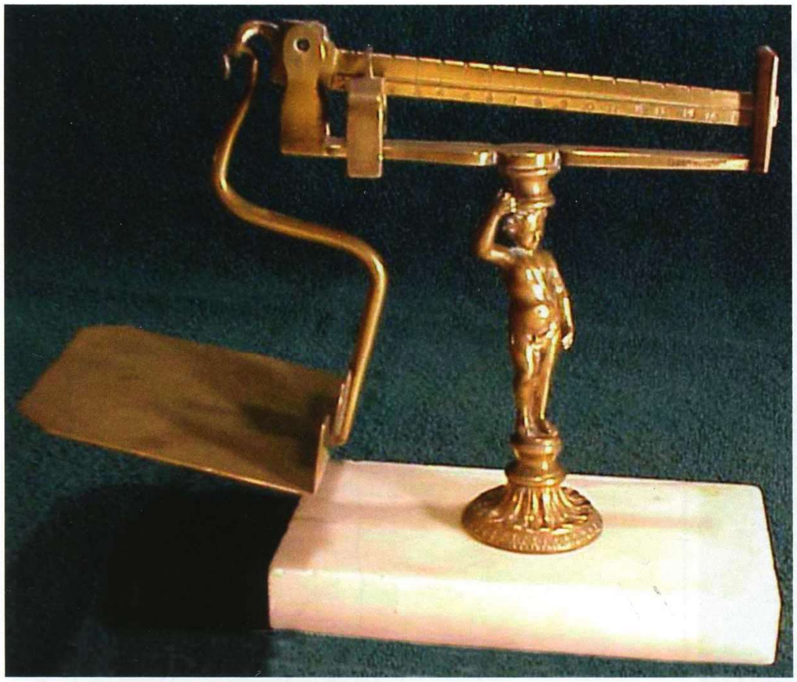


Figure 4. AA

The little boy supporting vine branches in Figure 3, is a second example of this founder's interest in the human figure. Again, it is a steelyard, but with the poise formed by two baskets of grapes. Never wanting to repeat a design, the founder used an amazingly ornate base and letter hanger, and gilded all of it. Nearly all of these scales are about 8 ins (20 cm) tall.

Still looking at steelyards by this founder, Figure 4 is much more restrained and elegant. The poise is bifurcated, like the baskets, but is shaped more like a little suitcase. The letter hanger is his plainest design, but the supporting boy is typical of his enthusiasm for the human figure. Looking at other designs by other makers at the same period, it is noticeable that our founder always had the figure in a static position, not dancing or gesturing or turning.

Our founder also liked female figures, as in Figure 5a & 5b. The steelyard and the poise are the same as Figure 4, but the modest milkmaid has got her clothes on. As ever, our founder wanted variety, lacquering her or black-patinating her.

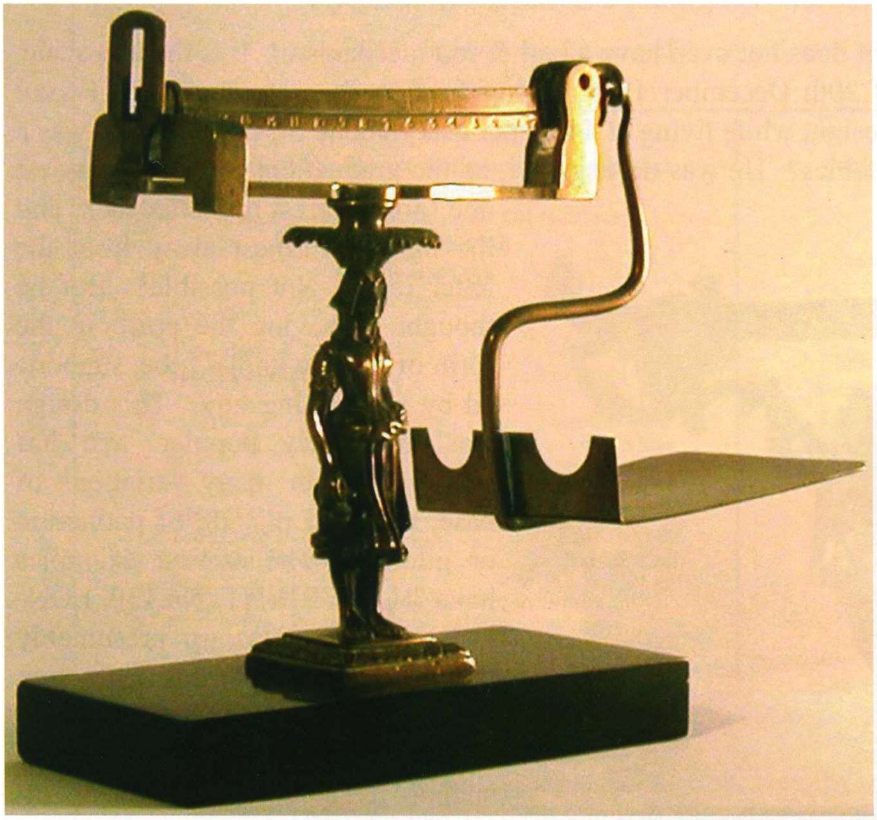


Figure 5a. AA

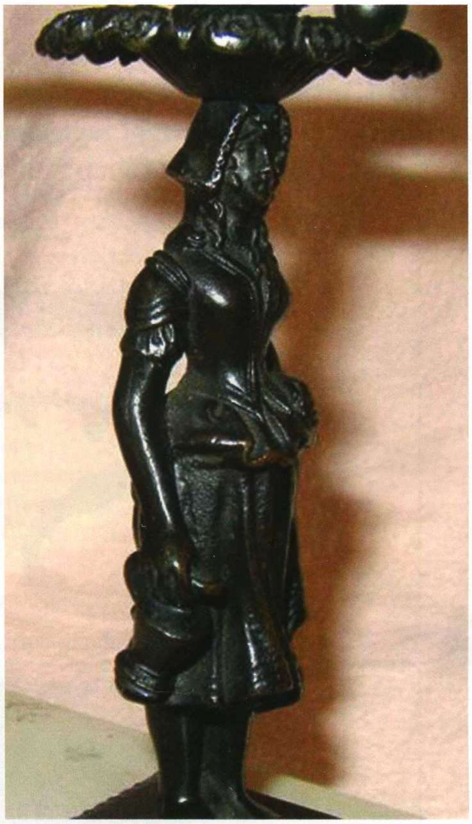


Figure 5b. AA

This lamp-lighter (Figure 6) is probably the most common of the ball & rod scales made by our founder, but this particular example has an unusual knobbed poise with matching feet instead of the regular ball poise and ball feet. The letter hanger is very unusual, as it comprises two snakes joined at the top by hanging leaves. The base is bright lacquered brass whereas he is usually standing on a black-patinated pavement. Having a fixed poise, it is an "over or under" scale. If the letter did not tip the beam, only one stamp was required, but if it tipped the beam, either the user put two stamps on, or he took it to the Post Office to make sure of the correct postage needed.

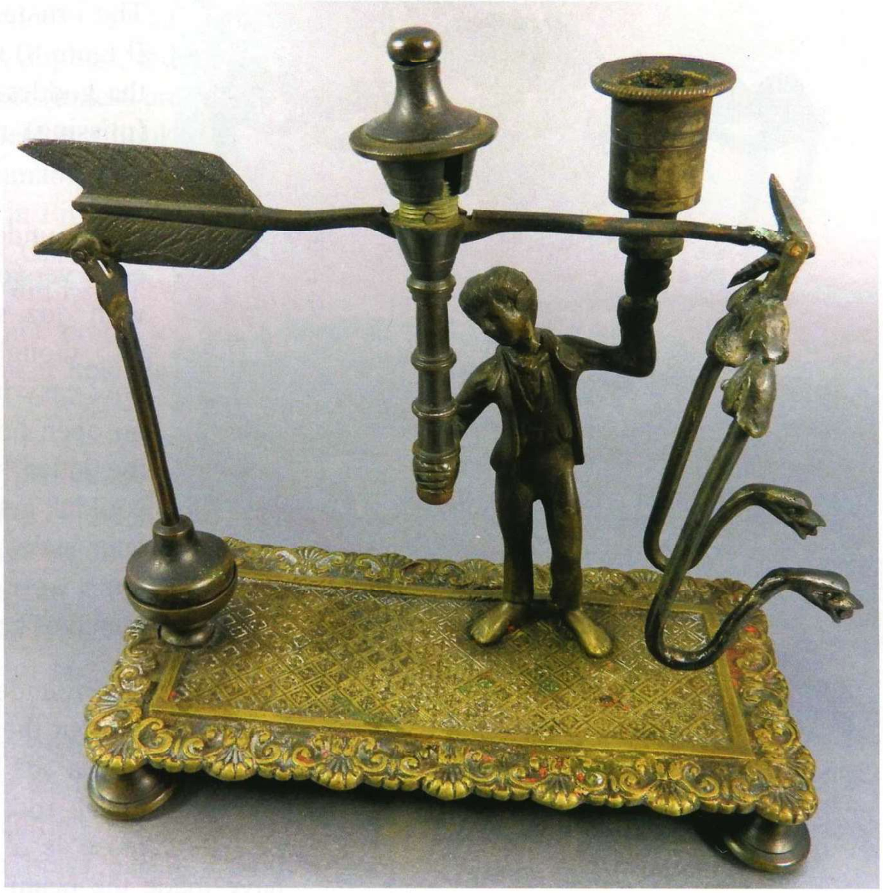


Figure 6. ▲▲

The base of Figure 7 is the same as the base that the lamp-lighter stands on, but the rest is novel. The ornate beam was occasionally used, as was the overflowing basket, but the rod and the pillar are patterned with criss-cross bands.

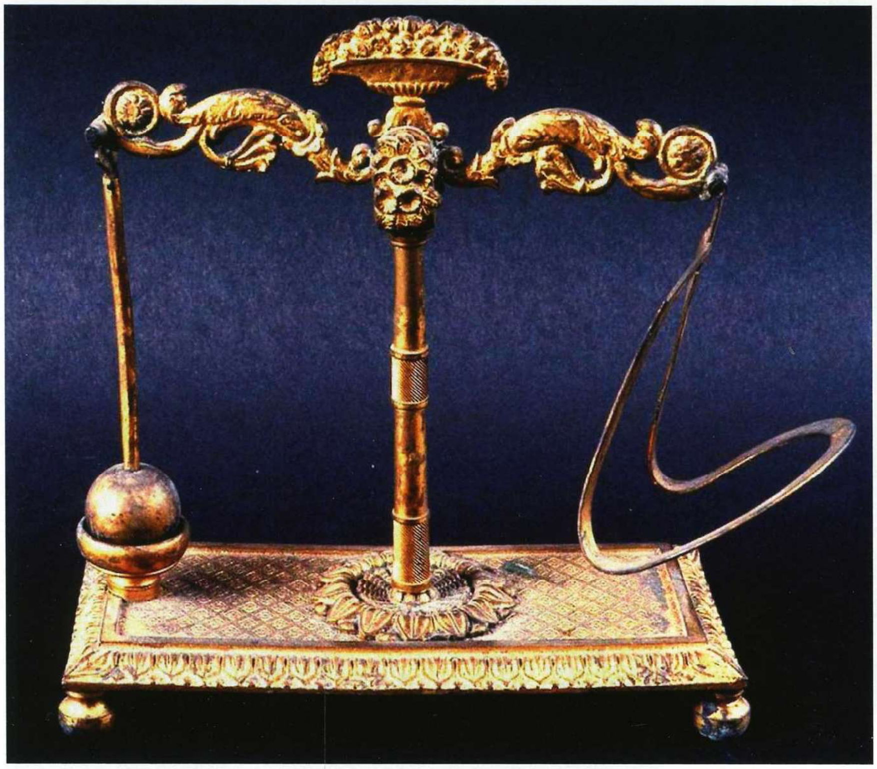


Figure 7. ▲▲

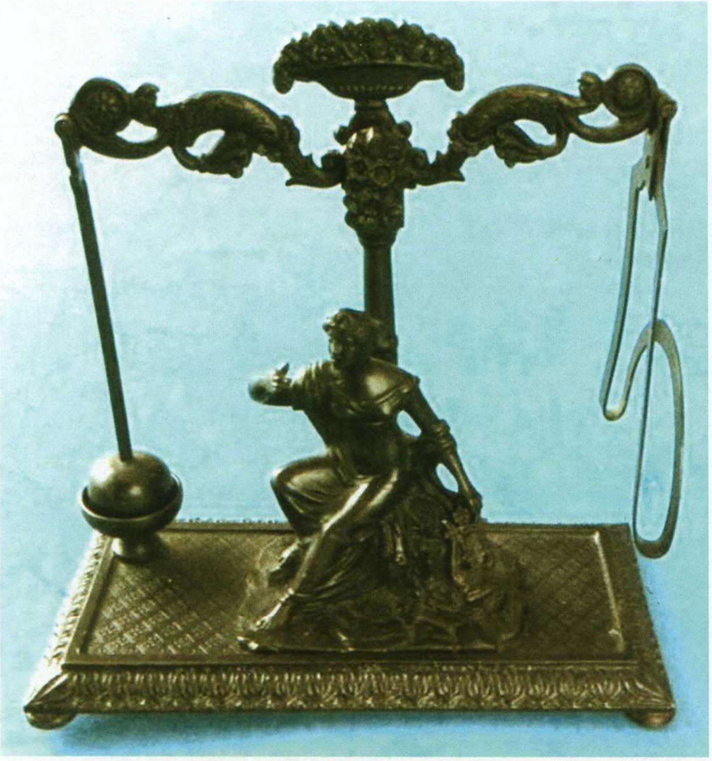


Figure 8. ▲▲

The ornate beam has been used again, but this time (Figure 8) the founder has black-patinated it to match the goddess sitting on a mound admiring herself in a (missing) mirror. Her harp is propped against the mound.

Our founder wanted variety, so Figure 9 shows his early version with a ball and chain. The ball poise tips with ½oz, so was made between 1839 and 1861. It is also thought to be early because he hadn't realised how easy it was to loose the hanging parts, just held on open hooks. The later scales all had the rod and the letter hanger attached permanently so that they couldn't get lost. But the pineapple finial was used on later scales. The collars on the beam and the cube fulcrum were rarely used, and the pillar rising out of a bunch of grapes is very rare.

Our founder experimented with loose poises (Figure 10) but they weren't very accurate. The beam tipped with a 1oz letter, and when the larger poise was added to the rod, it tipped with a 2oz letter. The smaller poise is a replacement, so, by deduction, it should have made the beam tip with a 1½oz letter. But why? There was no letter rate for 1½oz. The "under rate" of ½oz and the open hooks suggest that it was made before 1861.

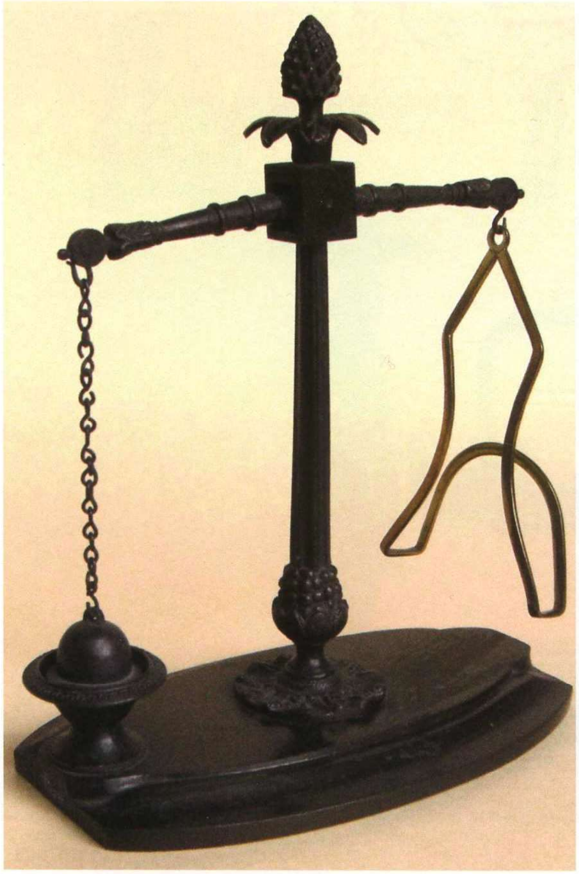


Figure 9. ▲▲

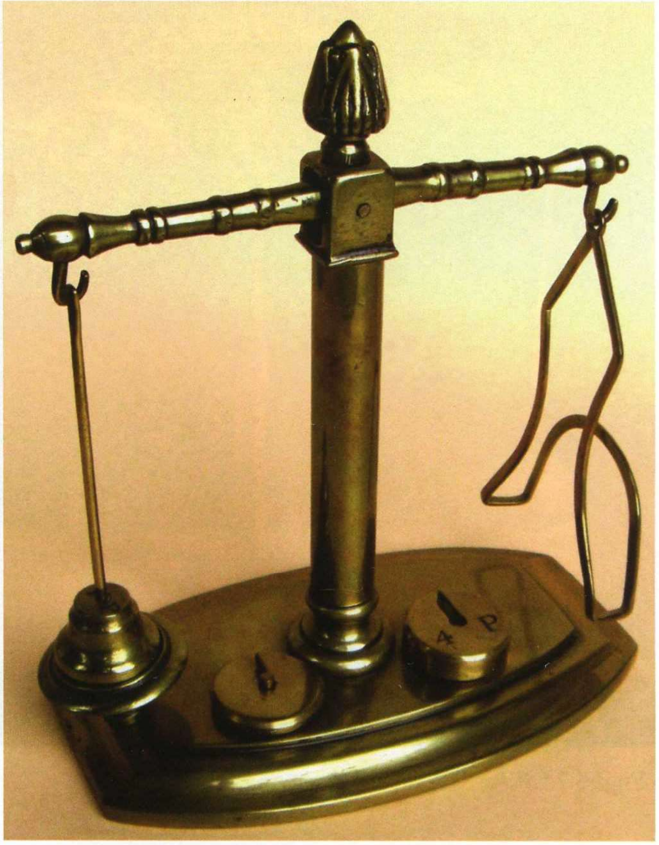


Figure 10. ➢➢

Another experiment with extra poises (Figure 11) was also a bit odd. If the larger ball & rod is applied, the letter rack is too small to take a 4 oz packet (unless an idiot was sending gold coins by post). There is a hook at the back for a smaller poise, presumably of 2 oz. The cube fulcrum is the same as that in Figure 10, but instead of a bud finial, this one has a Chinese hat finial. Well, he didn't want two the same, did he? The attractive letter hanger was robust and not prone to bending. The base is just dyed wood, but it held the cup for the ball securely, so did its job.

Our founder was not satisfied with two types of loose poises. He tried balancing the poises on top of the pillar. Figure 12. The spike holding them in position was badly bent when I bought it, and the large cup holding the poises was out of position, but fortunately it was mended carefully. The Buhl base is one of six variations seen on the ball & rod scales, all beautifully made by a specialist in cutting these delicate fret-work designs. Like Sampson Mordan, our founder would have bought his bases from specialists in stone cutting, wood working, and other materials. Only the brass bases would have been made in his factory.

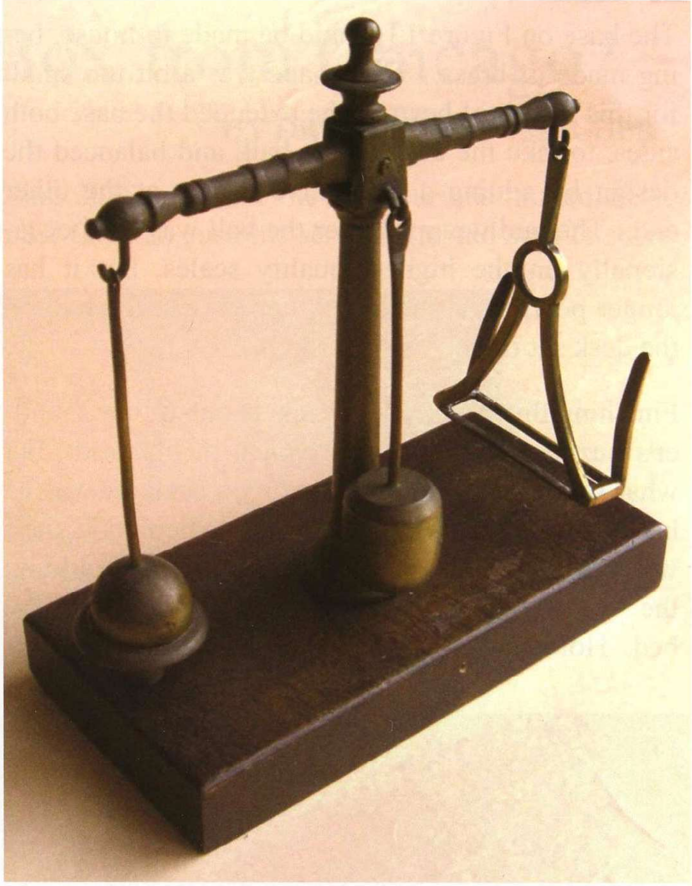


Figure 11. ▲▲

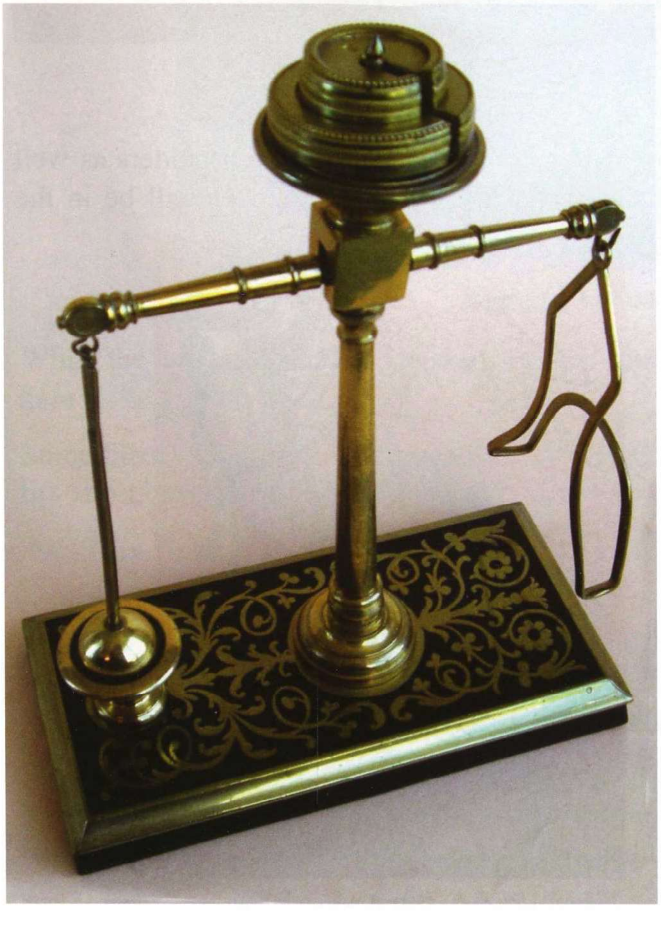


Figure 12. ◀◀

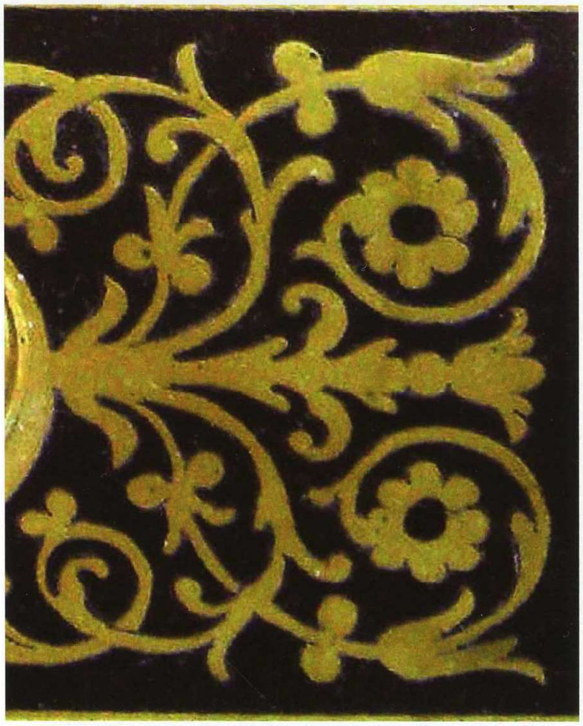


Figure 13. ▲▲ Detail of Buhl decoration on the base.

The base on Figure 13 would be made in-house, being made of brass. This shape was a bit too small for this length of beam so he extended the base both sides, to take the cup for the ball, and balanced the design by adding a decorative flower at the other end. The bud wrapped over the ball was used occasionally on the highest quality scales, but it has longer petals than the bud wrapped over the ball on the desk set on the Cover of EQM.

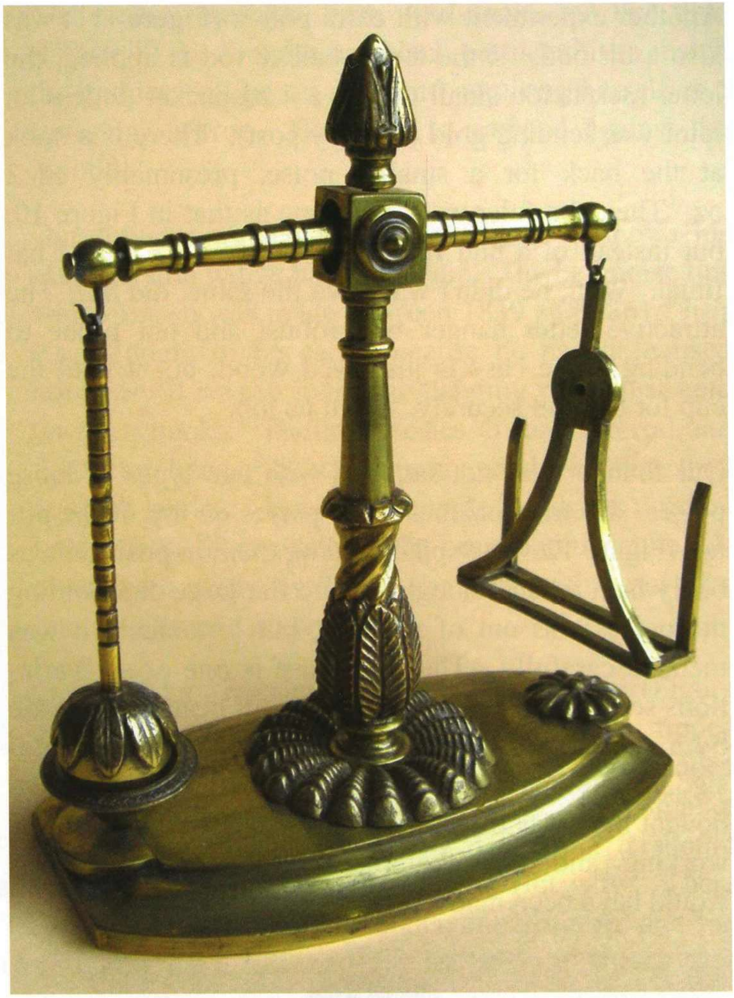


Figure 13. ⮝⮝

Finishing this part of the article is one of our founder's puzzles. Figure 14 is typical of his work, but what was it for? Was he holding a scale or was he holding a watch? Victorian gentlemen took their watches out of their vest pocket at night, and hung the watch on an ornamental holder by the bed. Holders were made of many materials, and our founder was known as a maker of brass watch-holders as well as scales. But more details about our founder will be in the next issue.

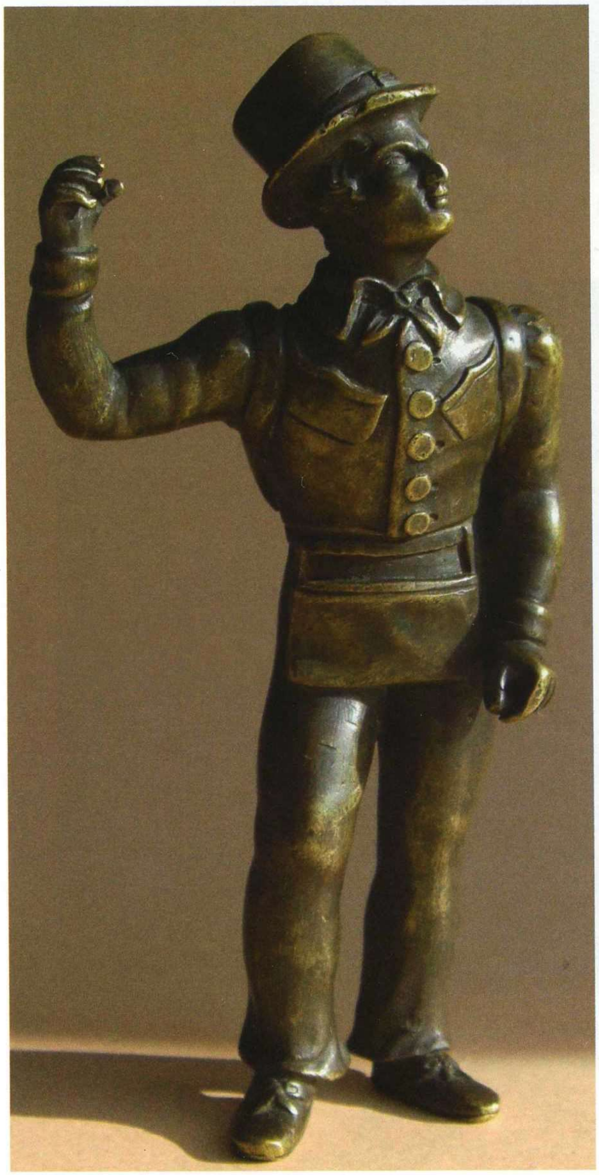


Figure 14. ⮜⮜

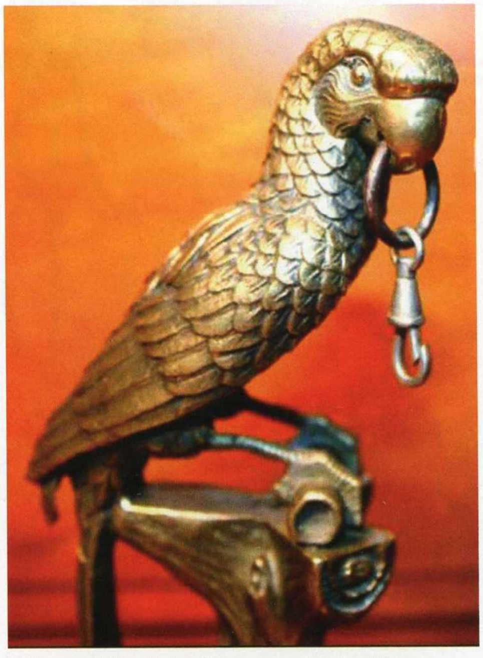
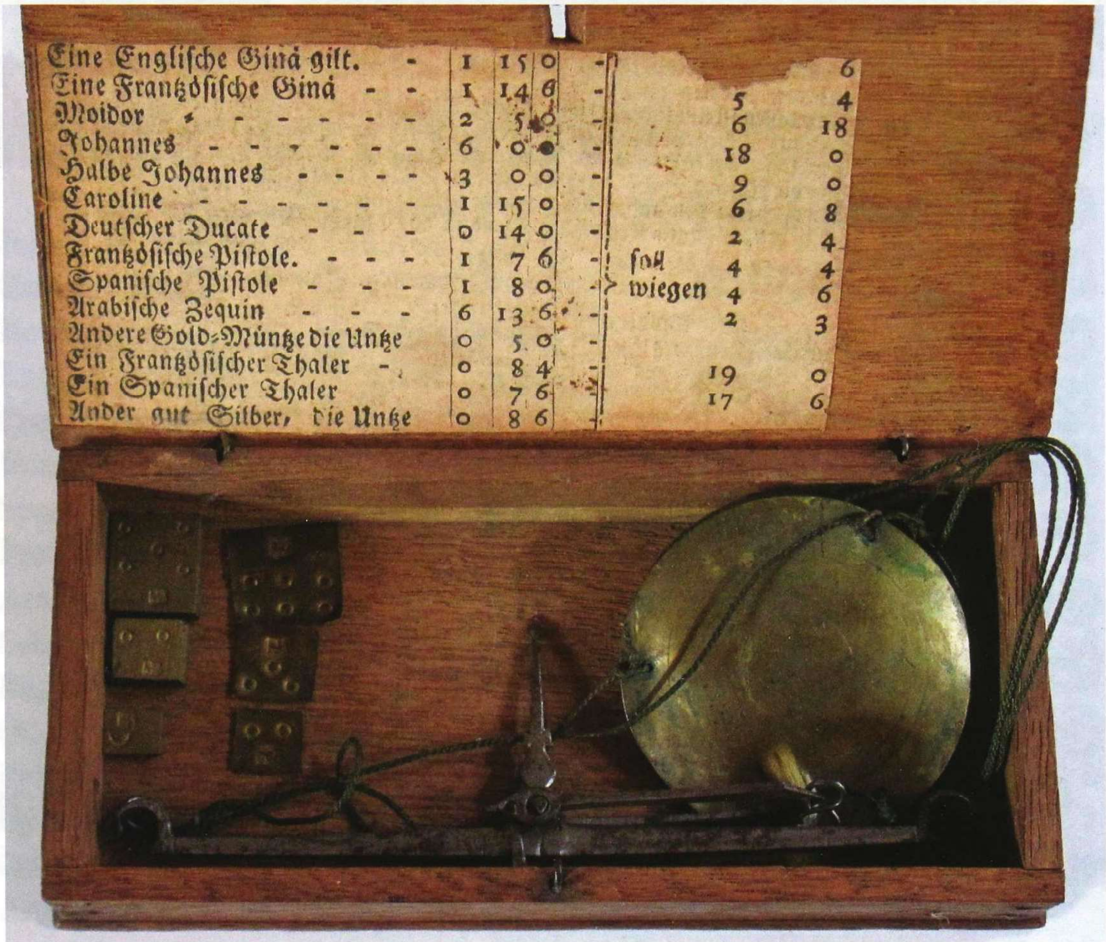


Figure 15. ⮝⮝ Parrot watch holder.

A German Gold Scale Box from Chicago?

BY DR. LUDWIG RAMACHER

The following box was offered in Chicago on ebay in spring 2018. It made me very curious immediately. After a journey of thousands of km and a passage through the German customs service, I could start to solve the riddle.



Eine Engliſche Ginà gilt.	1	15	0	ſoll wiegen		6
Eine Frantzöſiſche Ginà	1	14	6		5	4
Moidor	2	5	0		6	18
Johannes	6	0	0		18	0
Halbe Johannes	3	0	0		9	0
Caroline	1	15	0		6	8
Deutſcher Ducate	0	14	0		2	4
Frantzöſiſche Piſtole.	1	7	6		4	4
Spaniſche Piſtole	1	8	0		4	6
Arabiſche Zequin	6	13	6		2	3
Andere Gold-Müntze die Untze	0	5	0			
Ein Frantzöſiſcher Thaler	0	8	4		19	0
Ein Spaniſcher Thaler	0	7	6		17	6
Ander gut Silber, die Untze	0	8	6			

Figure 1. ⮝⮝ Money scales bought in Chicago.

While the label is clearly in German, the box, the scale and the weights are surely English. What do we have here?

Some facts. The plain wooden box is 147x70x24 mm (6x3x1 inch) wide. The beam is 125 mm (5 inches). Six sheet brass weights have survived:

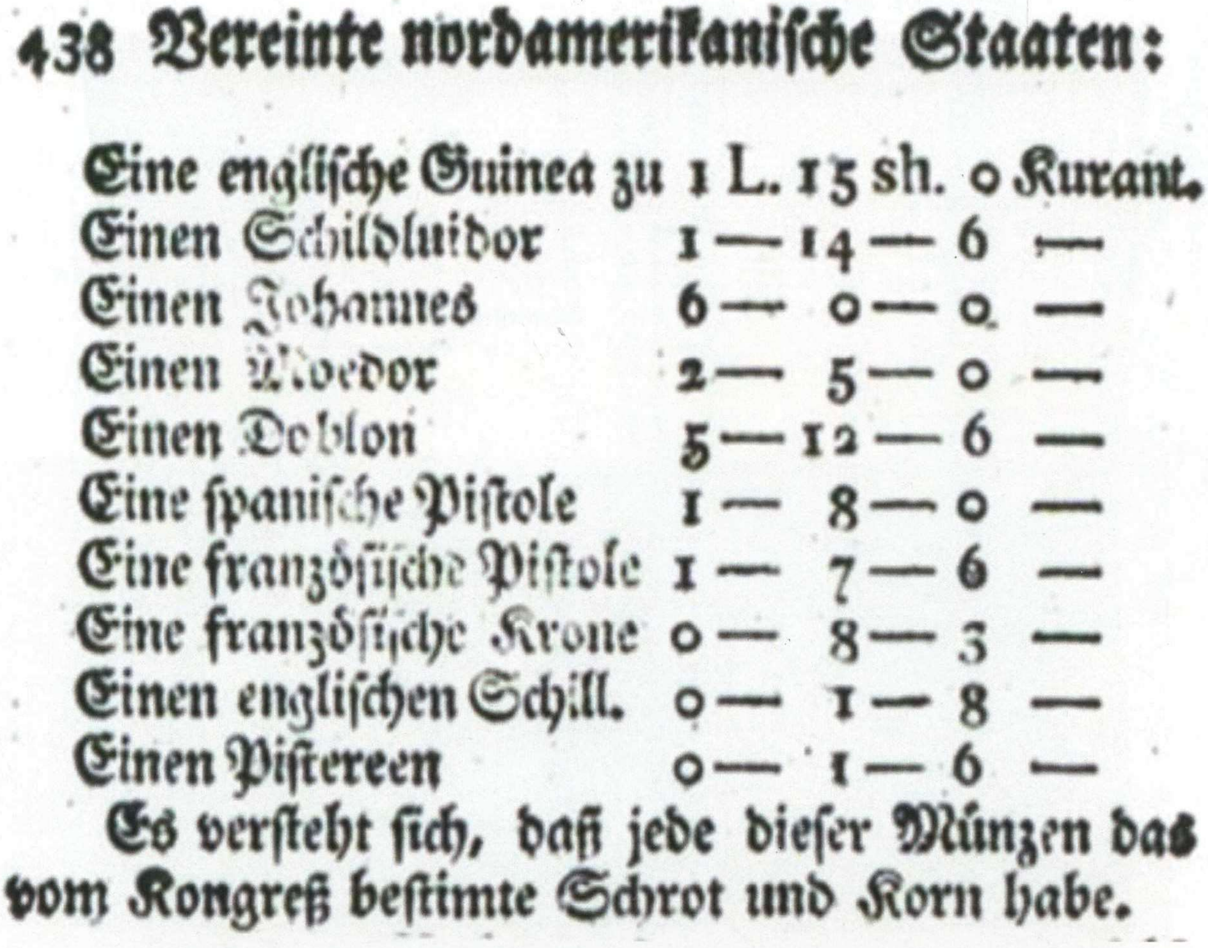
5 dots: 7,72 g (5 dwt)
2 dots: 3,10 g (2 dwt)
½ dot: 0,76 g (½ dwt)

6 dots: 0,32 g (6gr)
3 dots: 0,17 g (3 gr)
2 dots: 0,13 g (2 gr)

Why this combination and what does the label tell us?

Regarding the box and the scale Diana Crawforth-Hitchins helped me: Though scales with a flat pointer and a rectangular beam section have not been sold after 1715 in England, these boxes were distributed to the American colonies till about 1750. Rectangular weights with the mark of a lion do not contradict this period.

To find something about this unusual label[1] on which I had not the faintest idea, I did research in google books. Putting a line of the label into the search engine (here: moidor 2 5 0) some useful matches appeared, among those Christoph Daniel Ebeling Erdbeschreibung und Geschichte von Amerika, 4. Band (chapter) (about Pennsylvania), 1797 p.438, where I found the following table:



438 Vereinte nordamerikaniſche Staaten:

Eine engliſche Guinea zu	1 L.	15 sh.	0	Kurant.
Einen Schildluidor	1 —	14 —	6	—
Einen Johannes	6 —	0 —	0	—
Einen Moedor	2 —	5 —	0	—
Einen Doblon	5 —	12 —	6	—
Eine ſpaniſche Piſtole	1 —	8 —	0	—
Eine franzöſiſche Piſtole	1 —	7 —	6	—
Eine franzöſiſche Krone	0 —	8 —	3	—
Einen engliſchen Schill.	0 —	1 —	8	—
Einen Piſtereen	0 —	1 —	6	—

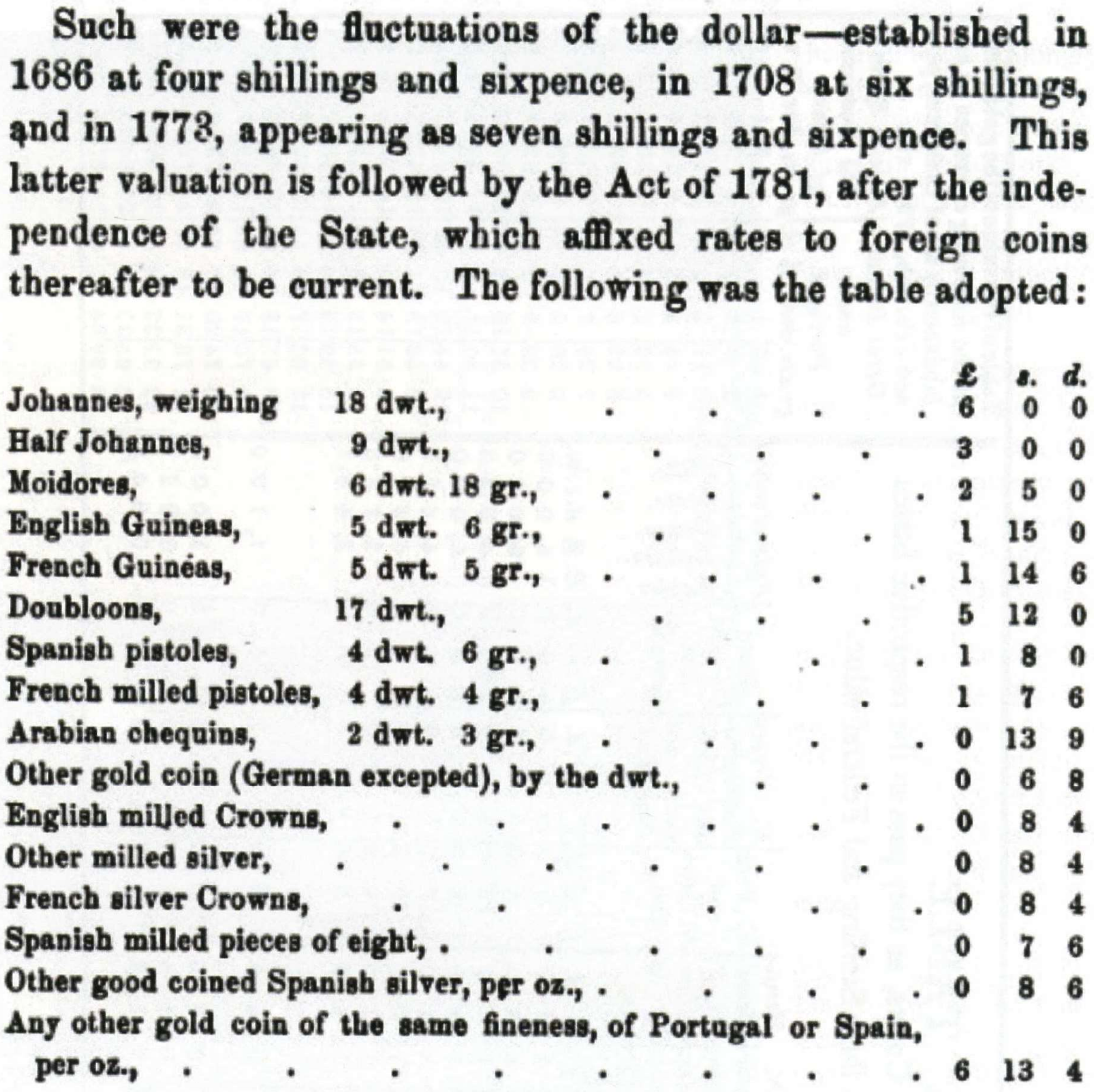
Es verſteht ſich, daß jede dieſer Münzen das vom Kongreß beſtimte Schrot und Korn habe.

Figure 2.

The table is not identical but similar enough to assume a connection. It shows that the first three columns with numbers should be values in Pounds, Shilling und Pence (here called Kurant=Current). "Soll wiegen"[2] before the fourth and fifth column indicate the masses in pennyweight (dwt) and grain (gr), fitting to the included weights. It includes an explanation for the term "Eine französische Gina", a term unknown to me before. I knew it as Louis d'or.

This source talks about "Vereinte nordamerikanische Staaten" which is historically correct, as the book was published after the Declaration of Independence.

Time now to go on with the research in English language and a further table could be found first in a publication from 1865, *Proceedings of the Numismatic Society of America, Early Currency of Maryland* by Henry Phillips, Jr.

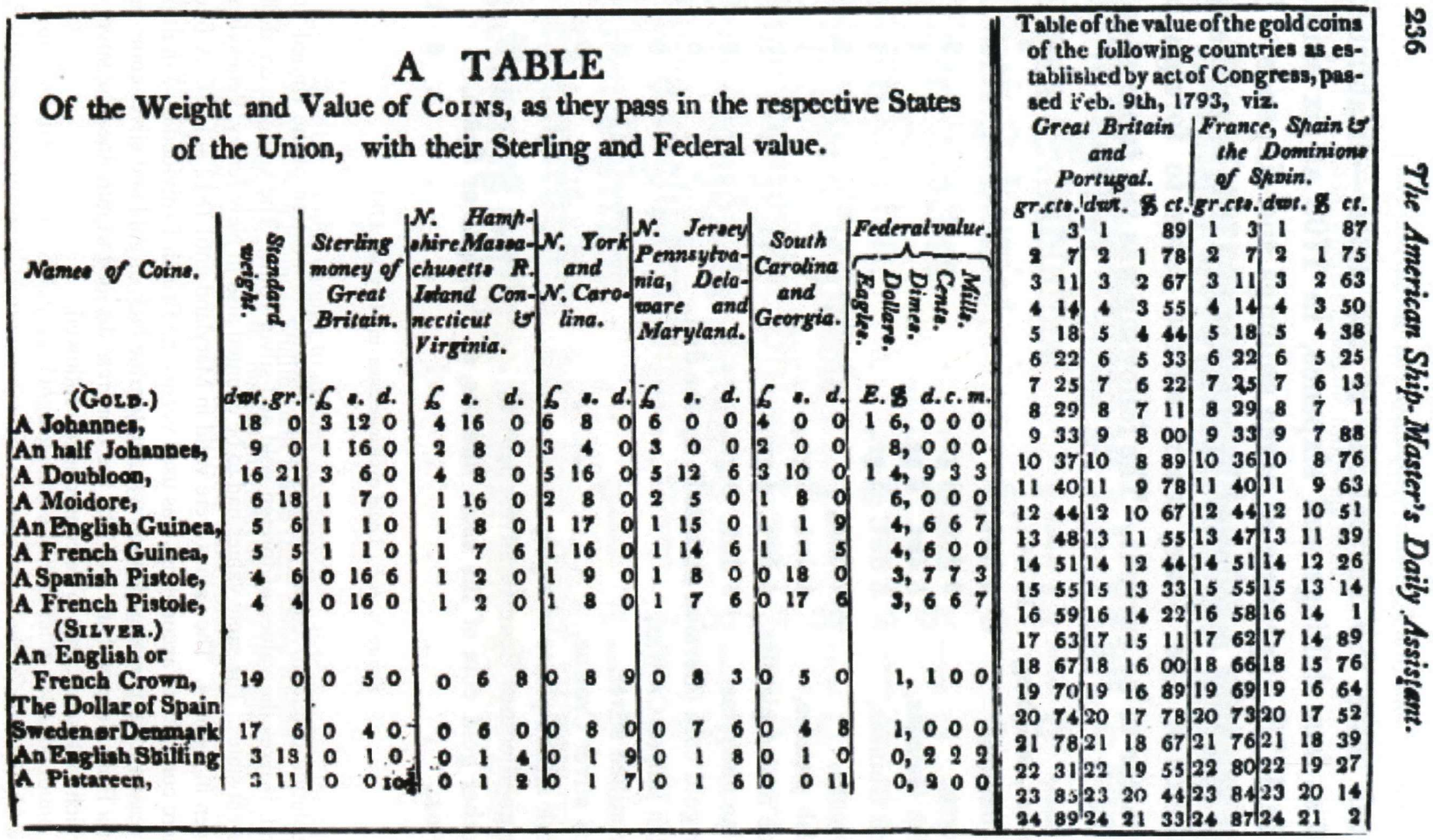


Such were the fluctuations of the dollar—established in 1686 at four shillings and sixpence, in 1708 at six shillings, and in 1773, appearing as seven shillings and sixpence. This latter valuation is followed by the Act of 1781, after the independence of the State, which affixed rates to foreign coins thereafter to be current. The following was the table adopted:

		£	s.	d.
Johannes, weighing	18 dwt.,	6	0	0
Half Johannes,	9 dwt.,	3	0	0
Moidores,	6 dwt. 18 gr.,	2	5	0
English Guineas,	5 dwt. 6 gr.,	1	15	0
French Guinéas,	5 dwt. 5 gr.,	1	14	6
Doubloons,	17 dwt.,	5	12	0
Spanish pistoles,	4 dwt. 6 gr.,	1	8	0
French milled pistoles,	4 dwt. 4 gr.,	1	7	6
Arabian chequins,	2 dwt. 3 gr.,	0	13	9
Other gold coin (German excepted), by the dwt.,		0	6	8
English milled Crowns,		0	8	4
Other milled silver,		0	8	4
French silver Crowns,		0	8	4
Spanish milled pieces of eight,		0	7	6
Other good coined Spanish silver, per oz.,		0	8	6
Any other gold coin of the same fineness, of Portugal or Spain, per oz.,		6	13	4

Figure 3. ⩓⩓ Legal exchange rates in Maryland 1781.

This is from legislation dated November 1781, shortly after the foundation of the United States. For the State of Maryland, it fixes the values of foreign gold and silver coins. The values were different at those times in the different states. The same values had to be counted also in New Jersey, Pennsylvania and Delaware as can be seen in figure 4. The values were valid in Maryland until 1812 at least. A fixed ratio of the Maryland £, a mere currency of accounting, was used versus the British £ (divided by 3 multiplied with five or 1:1,67). The reason for this over valuation was the terrible lack of gold and silver coins in the colonies, partly because of a British export ban. In 1785, the Congress decided to introduce the silver dollar as coin of accounting, which took some time to be consequently followed.



A TABLE

Of the Weight and Value of Coins, as they pass in the respective States of the Union, with their Sterling and Federal value.

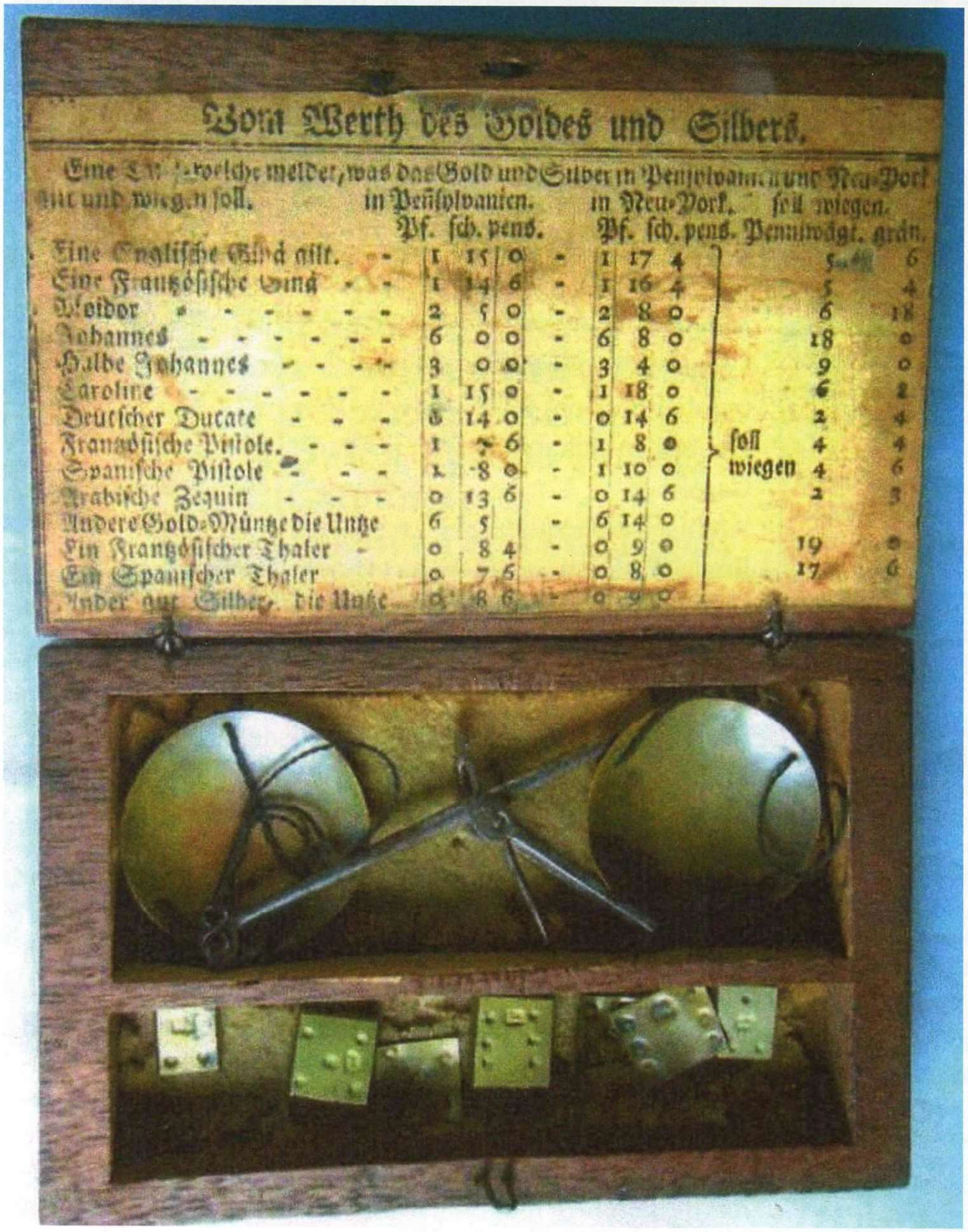
Names of Coins.	**Standard weight.**		*Sterling money of Great Britain.*			*N. Hampshire Massachusetts R. Island Connecticut & Virginia.*			*N. York and N. Carolina.*			*N. Jersey Pennsylvania, Delaware and Maryland.*			*South Carolina and Georgia.*			*Federal value.* Eagles. Dollars. Dimes. Cents. Mills.				
(Gold.)	*dwt.*	*gr.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	*E.*	$	*d.*	*c.*	*m.*
A Johannes,	18	0	3	12	0	4	16	0	6	8	0	6	0	0	4	0	0	1	6,	0	0	0
An half Johannes,	9	0	1	16	0	2	8	0	3	4	0	3	0	0	2	0	0		8,	0	0	0
A Doubloon,	16	21	3	6	0	4	8	0	5	16	0	5	12	6	3	10	0	1	4,	9	3	3
A Moidore,	6	18	1	7	0	1	16	0	2	8	0	2	5	0	1	8	0		6,	0	0	0
An English Guinea,	5	6	1	1	0	1	8	0	1	17	0	1	15	0	1	1	9		4,	6	6	7
A French Guinea,	5	5	1	1	0	1	7	6	1	16	0	1	14	6	1	1	5		4,	6	0	0
A Spanish Pistole,	4	6	0	16	6	1	2	0	1	9	0	1	8	0	0	18	0		3,	7	7	3
A French Pistole,	4	4	0	16	0	1	2	0	1	8	0	1	7	6	0	17	6		3,	6	6	7
(Silver.)																						
An English or French Crown,	19	0	0	5	0	0	6	8	0	8	9	0	8	3	0	5	0		1,	1	0	0
The Dollar of Spain Sweden or Denmark	17	6	0	4	0	0	6	0	0	8	0	0	7	6	0	4	8		1,	0	0	0
An English Shilling	3	18	0	1	0	0	1	4	0	1	9	0	1	8	0	1	0		0,	2	2	2
A Pistareen,	3	11	0	0	10½	0	1	2	0	1	7	0	1	6	0	0	11		0,	2	0	0

Table of the value of the gold coins of the following countries as established by act of Congress, passed Feb. 9th, 1793, viz.

Great Britain and Portugal.					*France, Spain & the Dominions of Spain.*				
gr.	*cts.*	*dwt.*	$	*ct.*	*gr.*	*cts.*	*dwt.*	$	*ct.*
1	3	1		89	1	3	1		87
2	7	2	1	78	2	7	2	1	75
3	11	3	2	67	3	11	3	2	63
4	14	4	3	55	4	14	4	3	50
5	18	5	4	44	5	18	5	4	38
6	22	6	5	33	6	22	6	5	25
7	25	7	6	22	7	25	7	6	13
8	29	8	7	11	8	29	8	7	1
9	33	9	8	00	9	33	9	7	88
10	37	10	8	89	10	36	10	8	76
11	40	11	9	78	11	40	11	9	63
12	44	12	10	67	12	44	12	10	51
13	48	13	11	55	13	47	13	11	39
14	51	14	12	44	14	51	14	12	26
15	55	15	13	33	15	55	15	13	14
16	59	16	14	22	16	58	16	14	1
17	63	17	15	11	17	62	17	14	89
18	67	18	16	00	18	66	18	15	76
19	70	19	16	89	19	69	19	16	64
20	74	20	17	78	20	73	20	17	52
21	78	21	18	67	21	76	21	18	39
22	31	22	19	55	22	80	22	19	27
23	85	23	20	44	23	84	23	20	14
24	89	24	21	33	24	87	24	21	2

Figure 4.

Shortly after my preliminary search I learned that Gary Batz has a similar box.[3]



Vom Werth des Goldes und Silbers.

Eine [illegible] welche meldet, was das Gold und Silber in Penſylvanien und Neu-York gilt und wiegen ſoll.

	in Penſylvanien.			in Neu-York.				ſoll wiegen.	
	Pf.	ſch.	pens.	Pf.	ſch.	pens.		Penniwdgt.	grän.
Eine Engliſche Guinea gilt.	1	15	0	1	17	4		5	6
Eine Frantzöſiſche Guinea	1	14	6	1	16	4		5	4
Moidor	2	5	0	2	8	0		6	18
Johannes	6	0	0	6	8	0		18	0
Halbe Johannes	3	0	0	3	4	0		9	0
Caroline	1	15	0	1	18	0		6	2
Deutſcher Ducate	0	14	0	0	14	6		2	4
Frantzöſiſche Piſtole.	1	7	6	1	8	0	ſoll	4	4
Spaniſche Piſtole	1	8	0	1	10	0	wiegen	4	6
Arabiſche Zequin	0	13	6	0	14	6		2	3
Andere Gold-Müntze die Untze	6	5		6	14	0			
Ein Frantzöſiſcher Thaler	0	8	4	0	9	0		19	0
Ein Spaniſcher Thaler	0	7	6	0	8	0		17	6
Ander gut Silber, die Untze	0	8	6	0	9	0			

Figure 5. ⮝⮝ Box of the Pennsylvania Dutch (Gary Batz).

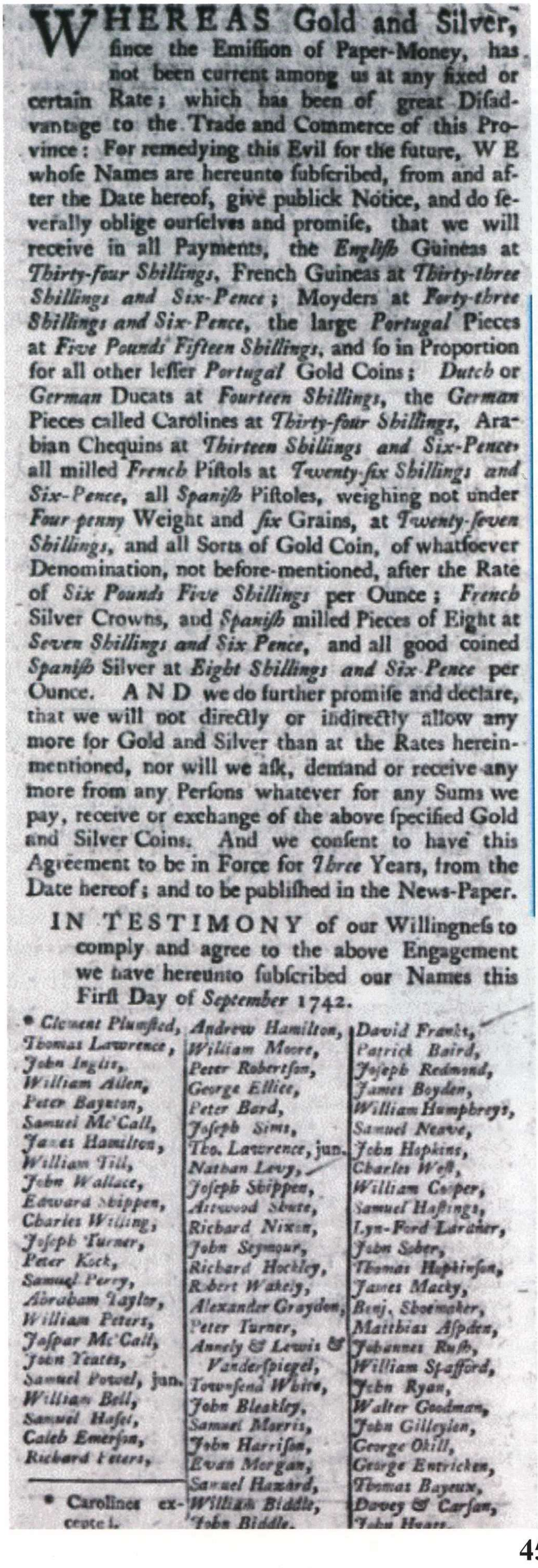
The label looks strikingly similar, though there is a heading in addition and additional columns with values for "Neu-York", both obviously cut off the label in my box. Also the printing error about the value of the "Arabische Zequin" is corrected.

Gary's explanation about the origin of the two boxes was amazing to me. He told me that these[4] are among the few examples known as coin scale boxes of the Pennsylvania Dutch (Pennsylvania Germans).

In 1683, the first group of 13 families left Krefeld in the western part of Germany[5], near The Netherlands (Crefeld at that time), and founded Germantown (originally: Deitscheschteddel), nowadays a quarter of Philadelphia.

What is now Pennsylvania was founded by/for the Quakers and Mennonites. It was the private property of William Penn in the beginning. As the use of the (old-fashioned) German language can still be found in certain areas, it is less surprising to find such a box with German labelling in the 18th century.

In an edition of *Numismatic Studies: Money of the American Colonies and Confederation* by Philip Mossman, 1993 it is described that the exchange rate for the "Spanischer Thaler" (8 Reales/Spanish pieces of Eight) of 90 d (=7 shilling 6 pence) was introduced in Pennsylvania in 1742, a value that possibly in 1775 was reduced to 86 d, to be 90 d again after 1783.



WHEREAS Gold and Silver, ſince the Emiſſion of Paper-Money, has not been current among us at any fixed or certain Rate; which has been of great Diſadvantage to the Trade and Commerce of this Province: For remedying this Evil for the future, WE whoſe Names are hereunto ſubſcribed, from and after the Date hereof, give publick Notice, and do ſeverally oblige ourſelves and promiſe, that we will receive in all Payments, the *Engliſh* Guineas at *Thirty-four Shillings*, French Guineas at *Thirty-three Shillings and Six-Pence*; Moyders at *Forty-three Shillings and Six-Pence*, the large *Portugal* Pieces at *Five Pounds Fifteen Shillings*, and ſo in Proportion for all other leſſer *Portugal* Gold Coins; *Dutch* or *German* Ducats at *Fourteen Shillings*, the *German* Pieces called Carolines at *Thirty-four Shillings*, Arabian Chequins at *Thirteen Shillings and Six-Pence*, all milled *French* Piſtols at *Twenty-ſix Shillings and Six-Pence*, all *Spaniſh* Piſtoles, weighing not under *Four-penny* Weight and *ſix* Grains, at *Twenty-ſeven Shillings*, and all Sorts of Gold Coin, of whatſoever Denomination, not before-mentioned, after the Rate of *Six Pounds Five Shillings* per Ounce; *French* Silver Crowns, and *Spaniſh* milled Pieces of Eight at *Seven Shillings and Six Pence*, and all good coined *Spaniſh* Silver at *Eight Shillings and Six-Pence* per Ounce. AND we do further promiſe and declare, that we will not directly or indirectly allow any more for Gold and Silver than at the Rates hereinmentioned, nor will we aſk, demand or receive any more from any Perſons whatever for any Sums we pay, receive or exchange of the above ſpecified Gold and Silver Coins. And we conſent to have this Agreement to be in Force for *Three* Years, from the Date hereof; and to be publiſhed in the News-Paper.

IN TESTIMONY of our Willingneſs to comply and agree to the above Engagement we have hereunto ſubſcribed our Names this Firſt Day of *September* 1742.

* *Clement Plumſted,*
Thomas Lawrence,
John Inglis,
William Allen,
Peter Bayston,
Samuel Mc'Call,
James Hamilton,
William Till,
John Wallace,
Edward Shippen,
Charles Willing,
Joſeph Turner,
Peter Kock,
Samuel Perry,
Abraham Taylor,
William Peters,
Jaſpar Mc'Call,
John Yeates,
Samuel Powel, jun.
William Bell,
Samuel Haſel,
Caleb Emerſon,
Richard Peters,

Andrew Hamilton,
William Moore,
Peter Robertſon,
George Ellice,
Peter Bard,
Joſeph Sims,
Tho. Lawrence, jun.
Nathan Levy,
Joſeph Shippen,
Attwood Shute,
Richard Nixon,
John Seymour,
Richard Hockley,
Robert Wakely,
Alexander Graydon,
Peter Turner,
Annely & Lewis & Vanderſpiegel,
Townſend White,
John Bleakley,
Samuel Morris,
John Harriſon,
Evan Morgan,
Samuel Hazard,
William Biddle,
John Biddle,

David Franks,
Patrick Baird,
Joſeph Redmond,
James Boyden,
William Humphreys,
Samuel Neave,
John Hopkins,
Charles Weſt,
William Cooper,
Samuel Haſtings,
Lyn-Ford Lardner,
John Sober,
Thomas Hopkinſon,
James Macky,
Benj. Shoemaker,
Matthias Aſpden,
Johannes Ruſh,
William Stafford,
John Ryan,
Walter Goodman,
John Gilleylen,
George Okill,
George Entricken,
Thomas Bayeux,
Dovey & Carſan,
John Hyatt,

* Carolines excepted.

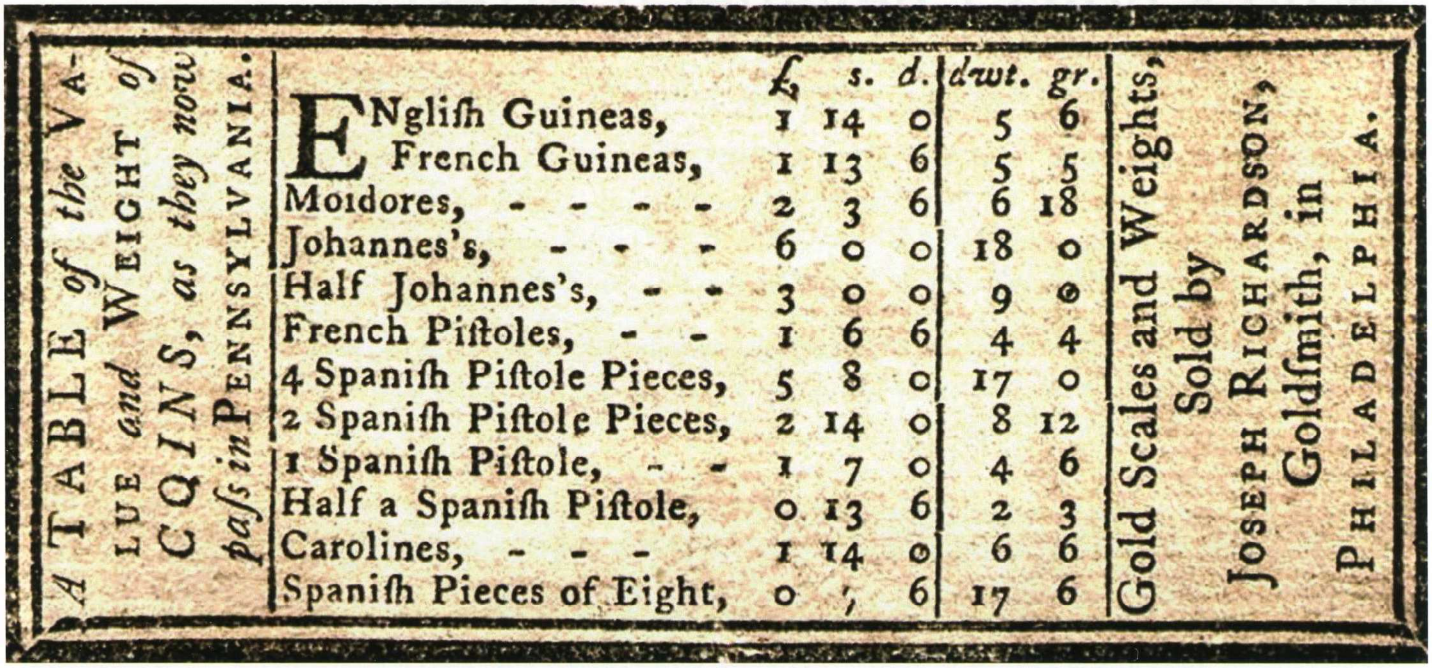
Figure 6. << *Pennsylvania Gazette* 17.06.1742 p3.

That reference is obviously based on the article shown at left which was published on 16.09.1742 in the *Pennsylvania Gazette*, a newspaper edited by Benjamin Franklin, of which also a German edition seems to have existed.

	£	sh	d
Englische Guineas	1	14	0
Franz. Guineas	1	13	6
Moyders	2	3	6
Large Portugal pieces (=Johannes/Joe)	5	15	0
Deutscher Dukat	0	14	0
Carolines	1	14	0
Arabische Chequins	0	13	6
Franz. Pistolen	1	6	6
Span. Pistolen (if > 4 dwt 6 gr)	1	7	0
"all sorts of gold coins" (per ounce)	6	5	0
Franz. Krone	0	7	6
Piece of eight	0	7	6
All good Spanish silver (coined, ounce)	0	8	6

Even though the values given here do not fit 100 % with the label in my box, the differences are rather small. Additionally, the names of the listed coins fit very well especially as Carolin and Arabische Zequin are mentioned. Those generally disappear in later labels. Specifically, "Arabische Zequin" is not mentioned anymore in labels after 1759, as far as I can say now. In my opinion, it therefore makes sense to assume a dating between 1742 and 1759.

Interestingly, the guarantee of fixed exchange rates does not come from public sources but was made by traders[6].



A TABLE of the VALUE and WEIGHT of COINS, as they now paſs in PENNSYLVANIA.

	£	s.	d.	dwt.	gr.
ENgliſh Guineas,	1	14	0	5	6
French Guineas,	1	13	6	5	5
Moidores, - - - -	2	3	6	6	18
Johannes's, - - -	6	0	0	18	0
Half Johannes's, - -	3	0	0	9	0
French Piſtoles, - -	1	6	6	4	4
4 Spaniſh Piſtole Pieces,	5	8	0	17	0
2 Spaniſh Piſtole Pieces,	2	14	0	8	12
1 Spaniſh Piſtole, - -	1	7	0	4	6
Half a Spaniſh Piſtole,	0	13	6	2	3
Carolines, - - -	1	14	0	6	6
Spaniſh Pieces of Eight,	0	7	6	17	6

Gold Scales and Weights, Sold by JOSEPH RICHARDSON, Goldſmith, in PHILADELPHIA.

Figure 7. ⩓⩓ Label of Joseph Richardson.

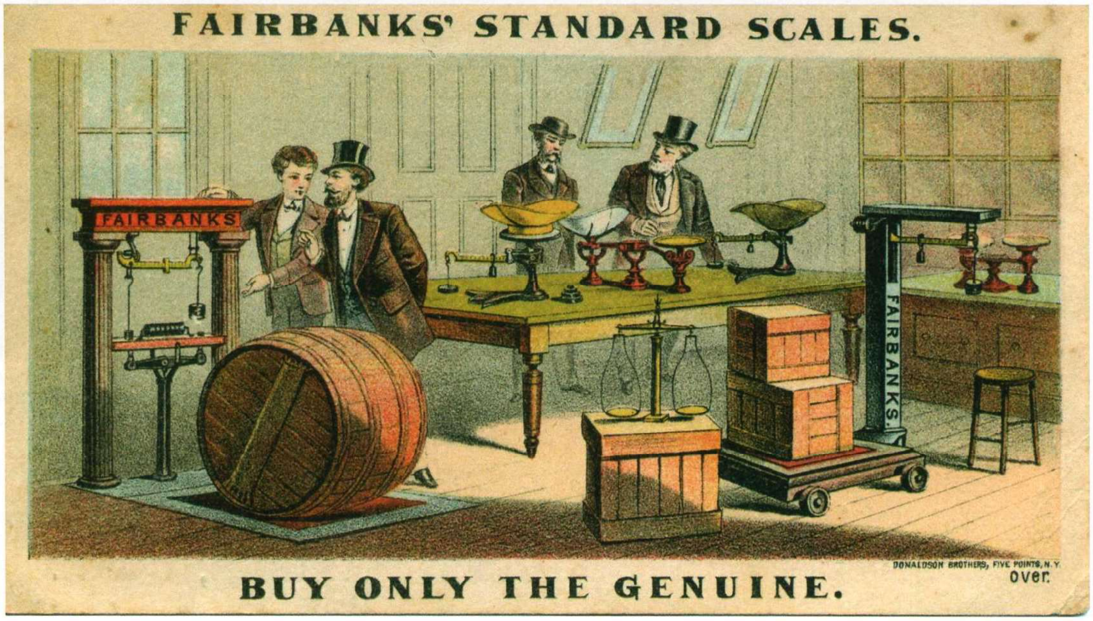
Figure 7 shows a label in English language used by the well-known goldsmith Joseph Richardson of Philadelphia which Diana Crawforth-Hitchins added. It is well known that Richardson and other traders purchased such boxes from London.

Notes & References:

1. The label shown in figure 1 has a printing error. The value of 6 £ 13 s 6 d for the "Arabische Zequin“ (which should be an Arabian ducat) makes no sense at all. The 6 has correctly to be one line lower.
2. “shall weigh”
3. 2,3, 5 and 6 dwt. plus 4,5 und 6 grains. Dimensions 142.3 x 93.8 x 25.7 mm. Beam 101,5 mm
4. A further label is shown, probably from a museum in Washington, at p 159 of G.M.M. Houben’s book *5000 Years of Weights*. The label is again similar but not identical.
5. Just 20 km from where the author lives. In Krefeld is still a Philadelphia Straße.
6. Among them, quite amusing Richard Nixon and William Till (=Wilhelm Tell?).

Old Advert

This Fairbanks Scale trade card was printed by Donaldson Brothers, Five Points, NY who were in business from 1870 to 1900. It measures 5$\frac{7}{8}$” by 3¼” and has a hardware company advertisement on its reverse.

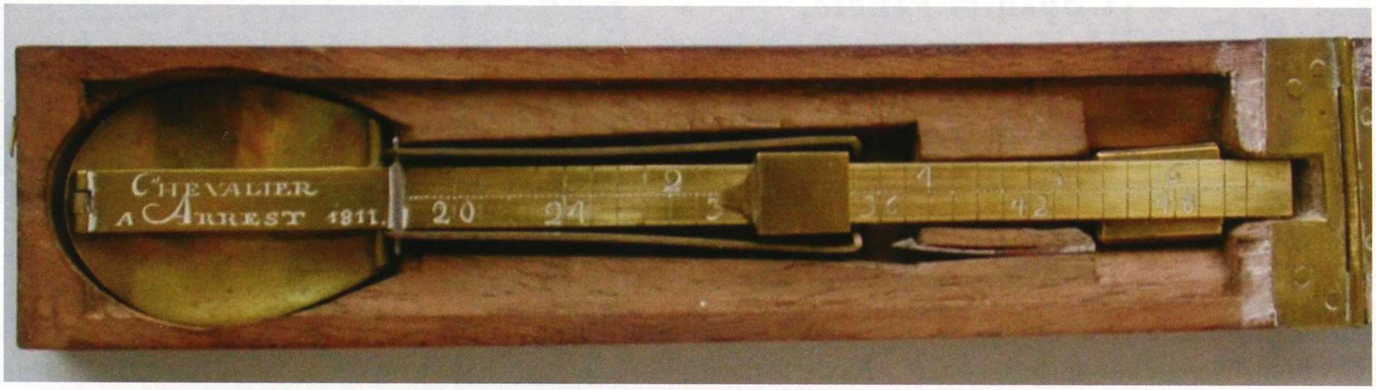

FAIRBANKS' STANDARD SCALES.
FAIRBANKS
FAIRBANKS
BUY ONLY THE GENUINE.
DONALDSON BROTHERS, FIVE POINTS, N.Y.
over.

Who Knows Chevalier à Arrest?

BY MICHAEL FOSTER, BERNARD MASSON, GILLES RICOCE AND JAAP VISSER

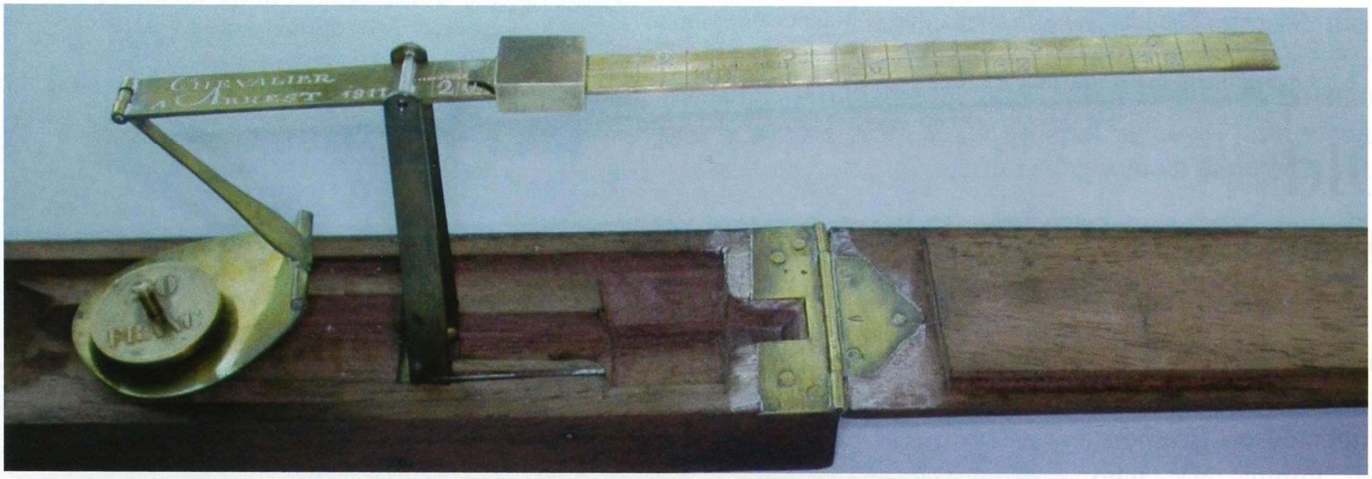
A folding Gold scale, with "CHEVALIER / A ARREST 1811" engraved on the beam, was recently discovered in a French auction by Jaap Visser, who acquired the scale. Jaap, with the assistance of Ritzo Holtman of the Gewichten en Maten Verzamelaars Vereniging (the Dutch Scale Society), contacted Bernard Masson of the Société métrique de France who along with Gilles Ricoce helped to research the scale.

In the meantime, Mike Foster acquired the scale from Jaap and started his own research. The following is the results of the study of this unusual scale.



Top view Beam folded into box with Lid open.
The Small poise is on the beam, and a Large poise is stored under the beam in the box

Beam: length: 152mm. width: 7.5mm. thickness: 1.0mm.
Platter to pivot: 38mm. Pivot to beam end: 114mm.
Fulcrum height: 63mm. Pan: length: 40mm. width: 31 mm



Side view of Beam fully raised with 20 Franc weight in pan and Small Slide showing '20' [Franc] on the graduations

Box: length: 167mm. width: 37mm. height: 20mm.

Mahogany Box with end-hinged lid and metal latch

This scale was made in 1811 to test French gold and silver coins introduced by Napoleon I in 1803 and set by French law in 1812 as "Mesures Usuelles" or "Customary Measures" which were in effect until 1 May 1840. The new Franc system was known as the "Germinal Franc" because the law relating to coinage was promulgated on 28 March 1803, called by the new Napoleonic dating system "7 Germinal, An XI".

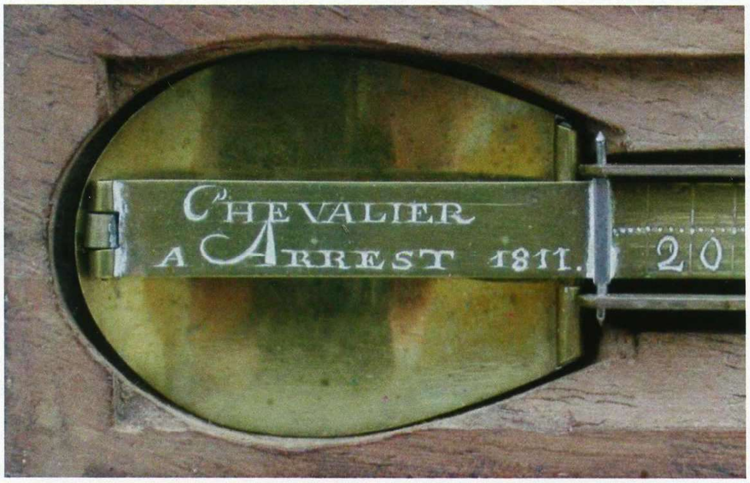
The law said that:

> ***Dispositions générales***
> *Cinq grammes d'argent, au titre de neuf dixième de fin, constituent l'unité monétaire, qui conserve le nom de Franc.*
> *TITRE 1er - De la Fabrication des monnaies*
> *Art. I - Les pièces de monnaies d'argent seront d'un quart de franc, d'un demi-franc, de trois-quart de franc, d'un franc, de deux francs et de cinq francs* (le trois-quart de franc ne sera jamais fabriqué).
> *Art. VI - Il sera fabriqué des pièces d'or de vingt francs et de quarante francs*
> *Art. VII - Leur titre est fixé à neuf dixièmes de fin et un dixième d'alliage*
> *Art. VIII - Les pièces de vingt francs seront à la taille de cent cinquante cinq pièces au kilogramme, et les pièces de quarante francs à celle de soixante dix sept et demie*
> ***General Provisions***
> *Five grams of silver, being nine tenths fine, constitute the monetary unit, retaining the name "Franc".*
> *1st TITLE - Manufacture of coins.*
> *Clause 1. The silver coins shall be one quarter of a franc, a half-franc, three-quarter francs, one franc, two francs and five francs (*three-quarters of a franc never manufactured*).*
> *Clause 6 - Gold coins of twenty francs and forty francs will be made*
> *Clause 7 - Their alloy is fixed at nine tenths pure and one tenth of alloy*
> *Clause 8. The twenty-franc pieces shall be the product of one hundred and fifty-five pieces per kilogram, and the coins of forty francs that of seventy-seven and a half [pieces per kilogram].*

The 20 Franc gold coin was more common than the 40 Franc. As stated in the new Law, it was sized at 155 coins per kilogram which works out at 6.45161 grams of 0.900 fine gold struck on a 21 mm flan. The 1 Franc was set at 0.32258 g of 0.900 fine gold. The 2 Franc silver coin was 10 grams of 0.900 fine silver.

The gold coins in circulation at the time also included the older 24 and 48 Francs. The gold to silver ratio was 15.5 to 1.

The beam of the scale is labeled "CHEVALIER / A ARREST 1811." at the platter end. This literally translates as "Knight to Arrest 1811.", but more correctly says "Chevalier of Arrest 1811."

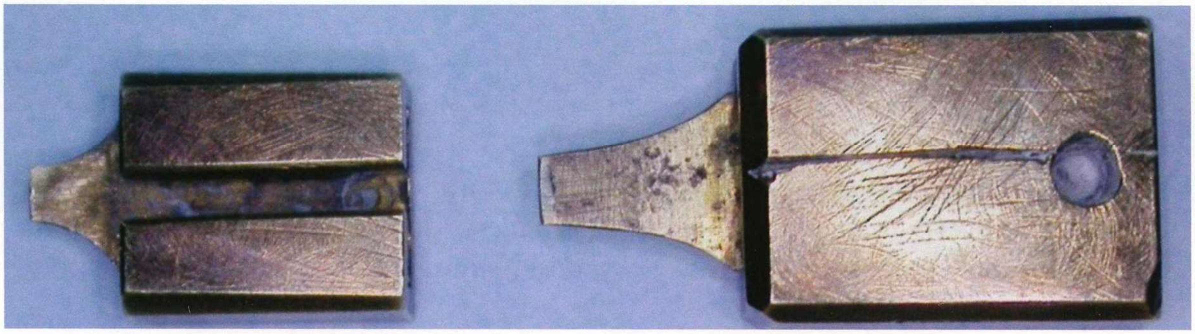


Beam labeled CHEVALIER / A ARREST 1811

Arrest is a small town (less than 900 inhabitants) in the department of the Somme, (arrondissement of Abbeville, canton of Saint-Valery on Somme) northwest of Paris. The Chevalier surname and family was associated with the town, see http://www.lagenealogie.com/histoire-ville-village-commune/arrest-80029.html .

Chevalier à Arrest is perhaps the title or surname of the owner of the scale along with the year it was made. Chevalier / Knight / Protector of the people, a gold and silver scale to protect against forgery, counterfeit and under weight transactions.

The Coin Scale has two loose poises ("slides") which slide along the beam. The slides are stored in the box when not in use. The small slide is used to determine the units on the lower graduations for gold coins, the large slide determines the units on the upper graduation for silver coins, [the silver coins being heavier than the more valuable gold coins.]

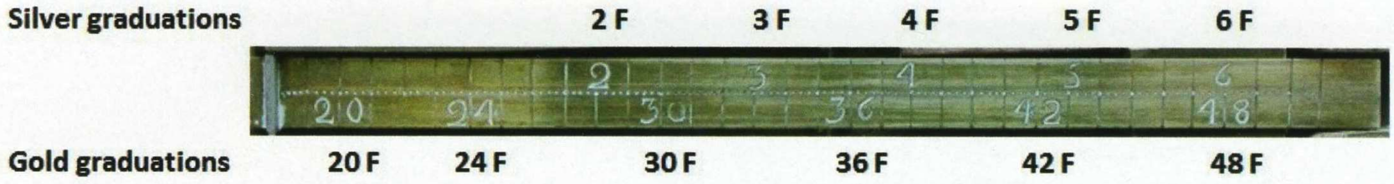


Two Slides: Small for Gold in 1 Franc units and the Large for Silver in 1 Franc units

Slide body: Small: 11.5x10x5.5mm. Large: 16.9x12.2x7.8mm.
Slide weight: Small: 3.68 g. Large: 11.43 g. * Corrected: 11.58 g.

* Note: The large slide had a 3 mm hole drilled into it at some point, reducing its weight by ~150 mg and making 1 Franc of silver to be tested as 4.867 g, instead of 5 g set by law. This was most likely to better test the old silver Franc coinage. Or it could have checked worn coins at their least current weight.

The Beam was labeled to weigh gold and silver coins in 1 Franc units depending on which slide and graduations are used. Note that each gold unit on the lower graduation is further divided into 4 with small dots between increments which makes the scale measure down to ¼ Francs gold. Each silver unit on the upper graduation was divided into 1/5 Francs increments (that was two décimes) and with the small dots to 1/20 Francs (that was 5 centimes). With the large slide, each unit should be 5 g or 1 Franc of silver per unit and 1/5 Franc per increment.



Beam Detail with markings and graduations.

The upper edge of the beam is marked in '2 to 6' units, graduated in 0.2 increments from '0.2 to 6.6'. With the large slide, each unit should be 5 g or 1 Franc of silver per unit and 1/5 Franc per increment. However, a hole drilled in the large slide at some time reduced its weight by ~150 mg making each unit 4.867 g instead of the 5 g. it should have been.

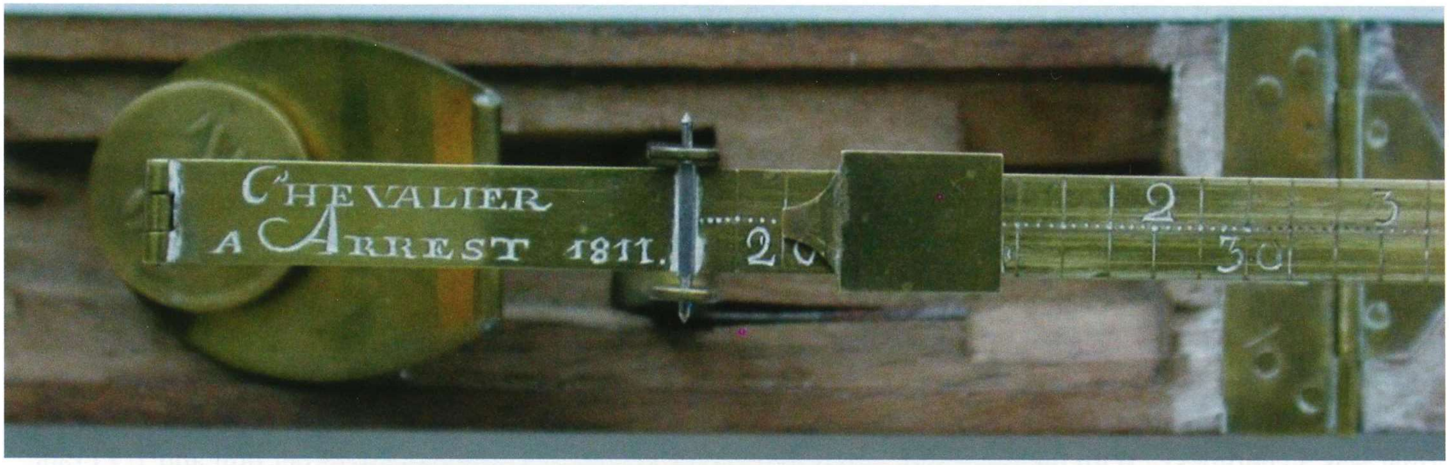
The lower edge of the beam is marked '20 to 48' in Francs graduated in 1.0 increments from '19 to 51'. With the small slide, each unit is 0.323 g or 1 Franc of gold per increment. ¼ Franc accuracy with the 4 small dots between increments.

These numbers imply a weight ratio of gold to silver of 15.1 to 1 for 1 Franc of silver versus 1 Franc of gold. With the large slide weight corrected the scale has a ratio of 15.5 to 1.

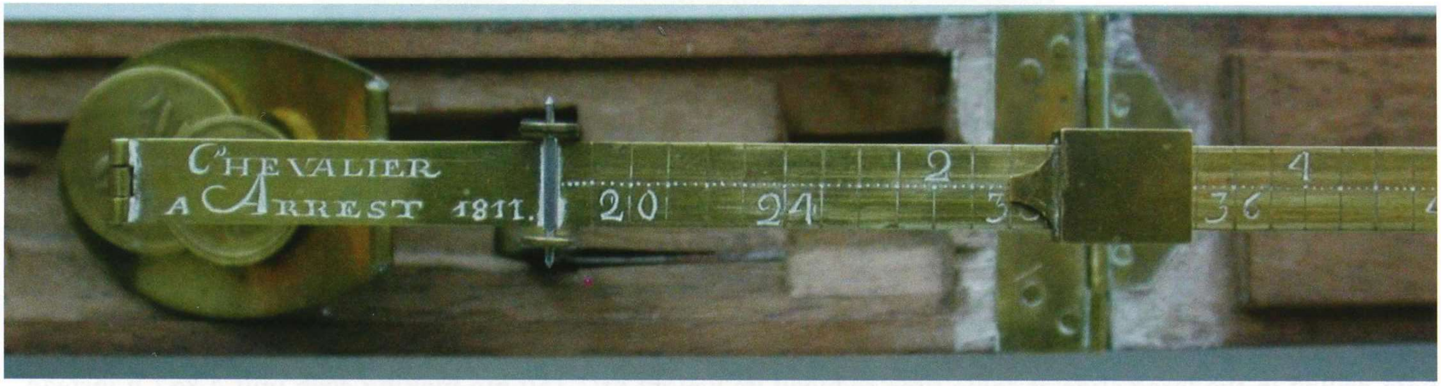
Tests on the weight in the pan to balance the beam to level with different settings of the large slide, large slide corrected * and small slides confirm the Franc markings for the two beam graduations:

Silver	upper graduate				2		3	4	5	6			F	5 div/unit
Large Slide	g. in pan				9.72		14.60	19.45	24.30	29.20			4.867	unit
Large Slide Corrected *	g. in pan				10.00		15.00	20.00	25.00	30.00			5.000	unit
Gold	lower graduate	19	20	23	28	30	33	38	43	48	50	51	F	1 div/unit
Small Slide	g. in pan	6.13	6.45	7.42	9.03	9.68	10.65	12.26	13.87	15.48	16.13	16.45	0.323	unit

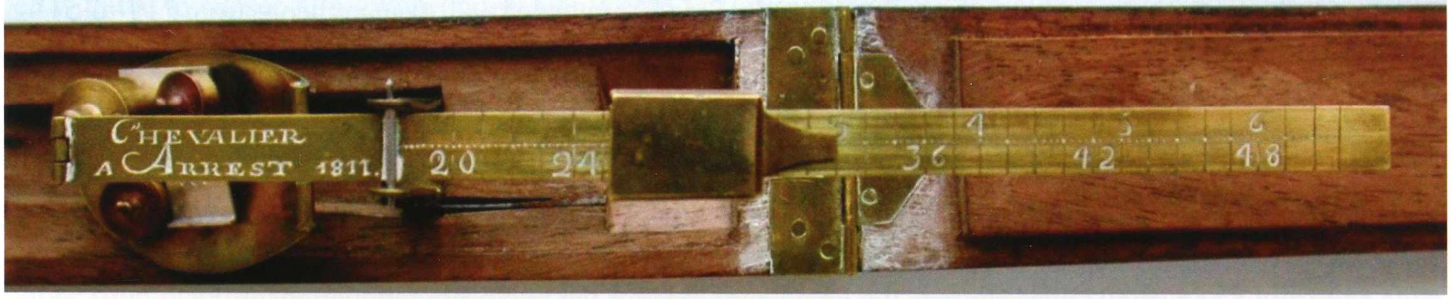
The weight in the pan to balance the beam to level with no slide present is 4.84 g.



Top view with 20 Franc gold weight in pan and Small Slide showing '20' Francs gold
Note the direction and position of small slide pointer.



Top view with 20 and 10 Franc gold weights in pan and Small Slide showing '30' Francs gold



Top view with 14.6 g. or 3 Francs Silver in pan and Large slide showing 3 Francs silver
Note the direction and position of large slide pointer.

At the time that this scale was made and in use c.1811 there was the "Germinal Franc", 20 and 40 Franc gold coins and the under 5 Franc silver coins to be tested. However, any existing gold or silver coins from the old French monetary system or any other European gold or silver coins in circulation in France could be tested on this scale to find their gold or silver value in the "Germinal" Franc.

Circa 1811 the legal ratio of gold to silver was 15.5 to 1. The large slide has been adjusted at some point to make the tested ratio about 15.1 to 1. This means the large slide was adjusted from testing to 5 F = 25 g. of silver to 5 F = 24.3 g. of silver which would be in keeping with older French silver coinage which had a higher fineness and therefore more silver in the weight of the coin.

This extremely rare coin steelyard could well have been inspired by the flatter coin steelyards made by Jecker and others before the Napoleonic Revolution, but its use of two poises makes it easier to use, and more compact. It would be most interesting to find another one signed by the maker.

A Multi-coin Folding Gold Balance by Anthony Wilkinson

BY MICHAEL FOSTER & DIANA CRAWFORTH-HITCHINS

Finding this rare folding gold balance has lead to some serious thinking about why Anthony Wilkinson invented this elaborate system. Before describing it in detail, we need to consider the coinage used during his life-time, 1736 until 1803.

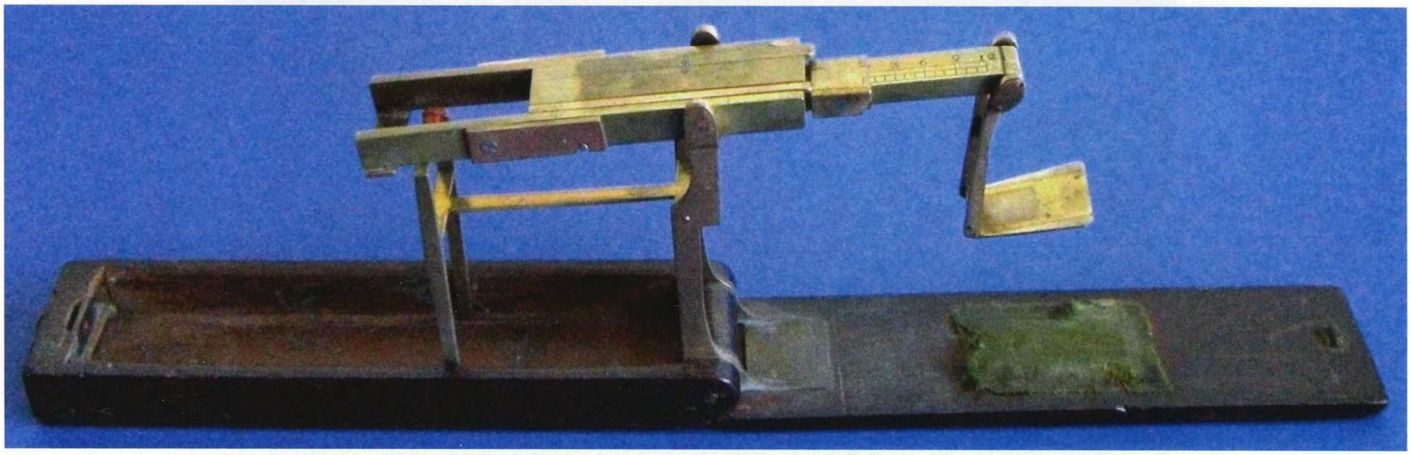


Figure 1. ▲▲ Side view of the Multi-Coin Folding Gold Balance by Anthony Wilkinson.
Dimensions: Beam length: 116 mm. Beam width at small turns: 21 mm.

The English, like all Europeans until the 19th century, used any gold coins, regardless of which country they had been minted in. Portuguese coins particularly were in circulation in addition to the British Guinea and its fractions, because of the large amount of trade with Portugal after England's trade treaty in 1703. The British did not doubt the purity of the Portuguese coins, and they accepted the 8 Portuguese gold coins (the Johannes and Moidore and their fractions) in payment.[1]

Between about 1730 and 1775 Portuguese coins almost completely overwhelmed the inadequate supply of guineas from the Royal Mint. The most numerous Portuguese coins were the moidore valued at 27 Shillings with a weight of 6 dwt 22 grains, and the half-moidore at 13 Shillings and 6 pence with a weight of 3 dwt 11 grains.[2]

In 1762 the quarter guinea was introduced, so after that there were eleven coins for which weights were conventionally supplied. Collectors today refer to the weights as a "Long Set".

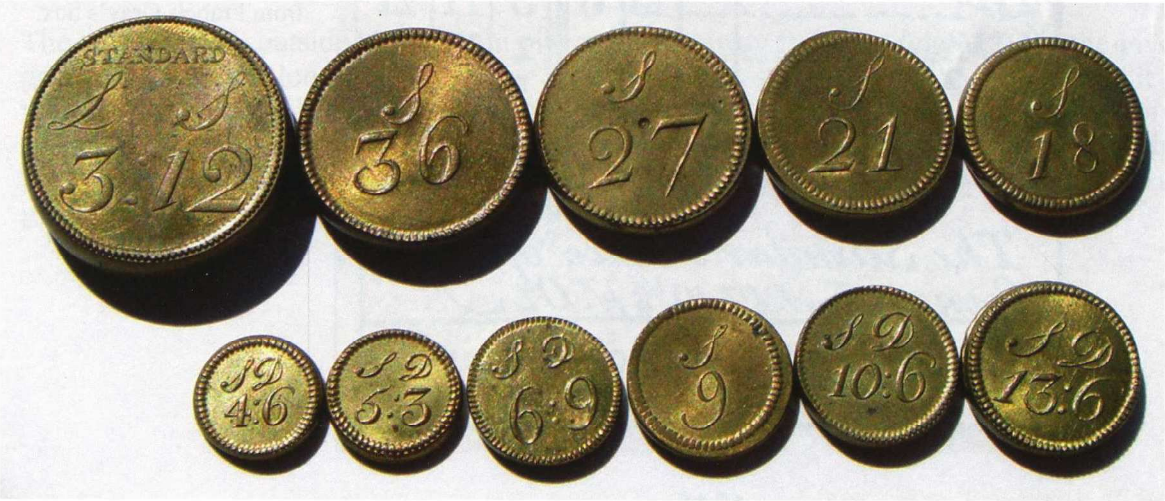


Figure 2. ◀◀ A "Long Set" of weights (Withers No. 1673) from a box by Francis Gray (1766-1775) used to test the folding gold Balance.

The mass and value were accepted by the British by custom, but there was no official standard for the Portuguese pieces. Francis Gray gave a table in his scale box, so that the user of the scales could argue about exact value with the shop-keeper after they had found any deficiencies in the coins being offered in payment[3].

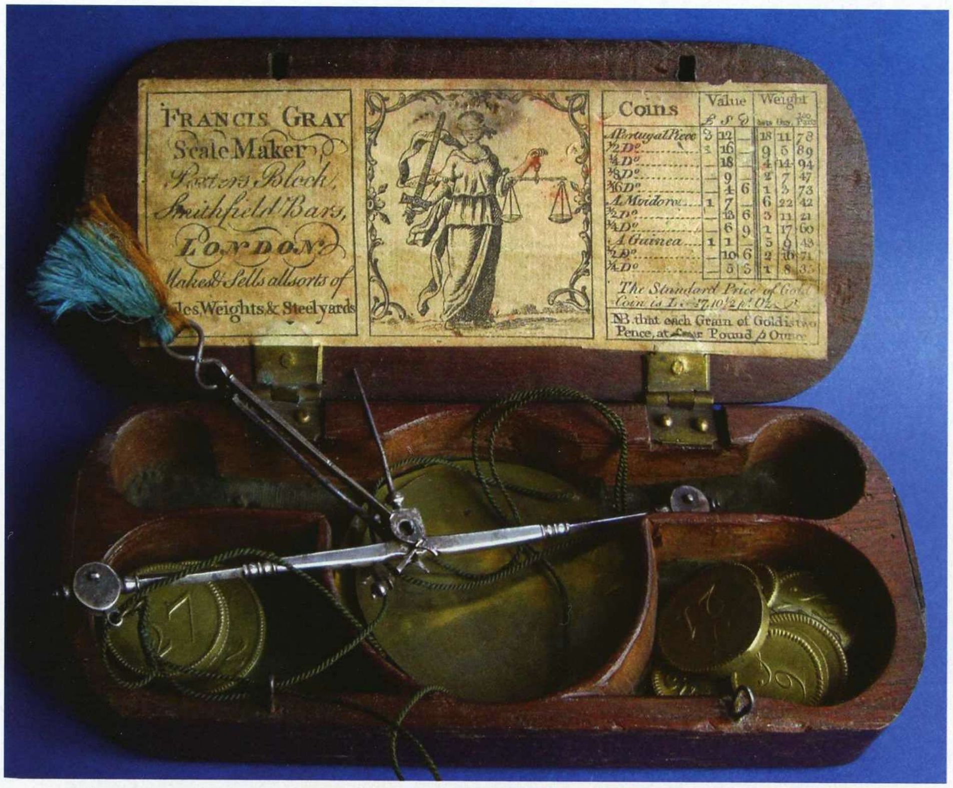
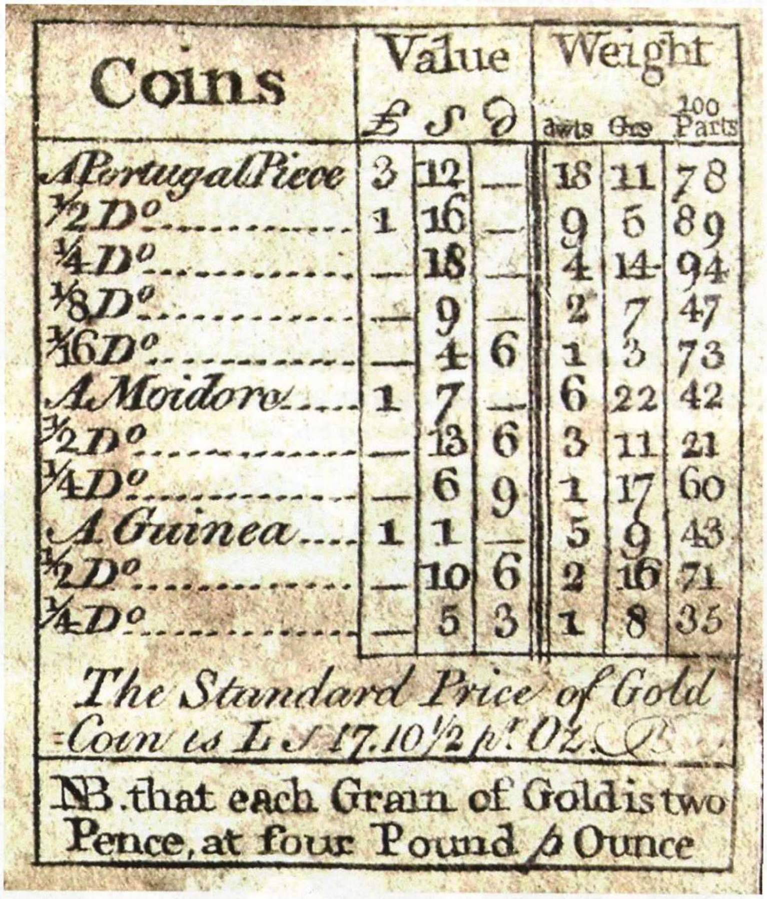


Figure 3a. ⮝⮝ Francis Gray's box with "Long Set" weights and Balance, c.1770[4].



Coins	Value			Weight		
	£	s	d	dwts	Grs	100 Parts
A Portugal Piece	3	12	—	18	11	78
½ D°	1	16	—	9	5	89
¼ D°	—	18	—	4	14	94
⅛ D°	—	9	—	2	7	47
1/16 D°	—	4	6	1	3	73
A Moidore	1	7	—	6	22	42
½ D°	—	13	6	3	11	21
¼ D°	—	6	9	1	17	60
A Guinea	1	1	—	5	9	43
½ D°	—	10	6	2	16	71
¼ D°	—	5	3	1	8	35

The Standard Price of Gold Coin is L 3 17.10½ pr Oz.

NB. that each Grain of Gold is two Pence, at four Pound p Ounce

Figure 3b. ⮜⮜ Enlargement of "Long Set" Value and Weight Table from Francis Gray's box.

By about 1745 the Portuguese coins were beginning to wear in general circulation or be clipped, so there was a need for the "Long Set" of coin weights or some other means to test the coins. Numerous scale makers began to make larger boxes, with room to accommodate all the weights, but that meant heavier boxes.

There was always a risk of loosing a weight during the fiddly process of weighing, perhaps by the light of a candle, or in a crowded market. Several scientific instrument makers and clockmakers eliminated the need for the eleven weights by offering multi-coin steelyards like those offered by Bradford, Darby & Hulls, (patent 1753), Benjamin Martin (in catalogues 1757 & 1762) and later Christopher Pinchbeck. They were simple ruler-like brass strips with a small brass poise to slide along the steelyard, easily put in the pocket, and easy to use. So why did Wilkinson make this folding gold balance with its complicated system of turns? Was it just an intellectual challenge? Had he never seen any of the coin steelyards from the south of England?

Anthony Wilkinson, who claimed to be the inventor of folding gold balances,[5] was almost certainly the maker of this Folding Gold balance that, as will be seen, could test all eleven coins of the "Long Set" of English and Portuguese gold coins. He did not apply his signature (which was probably on the missing paper label), but the style is exactly his.

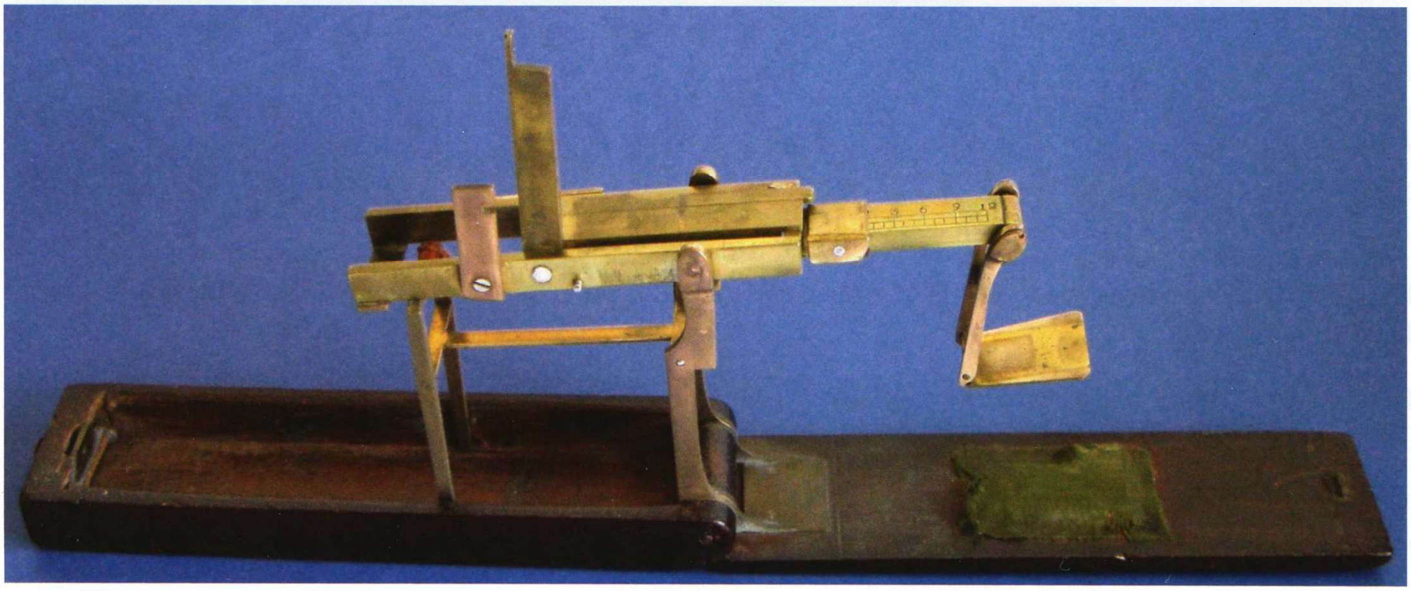


Figure 4. ▲▲ Side view of the Multi-Coin Folding Gold Balance with No. 5 small and No. 4 large turns upright for better viewing. Note the different pivot points used in the small and large turns. Deficiency slide graduations of 0, 3, 6, 9, 12 [grains].

The two smallest, outside turns are on pivots further away from the fulcrum than the pivots of the three bigger turns. A small loose poise was needed, which was stored next to the catch, but it is now missing. It would have been made of a rectangle of flat sheet brass. Nearer the fulcrum than the pivot for all the other turns are two pins, protruding from the bifurcated beam, that support the small turns when they are flipped in towards the coin plate. The coin plate is larger than on other Wilkinson folders, to allow for the larger gold coins.

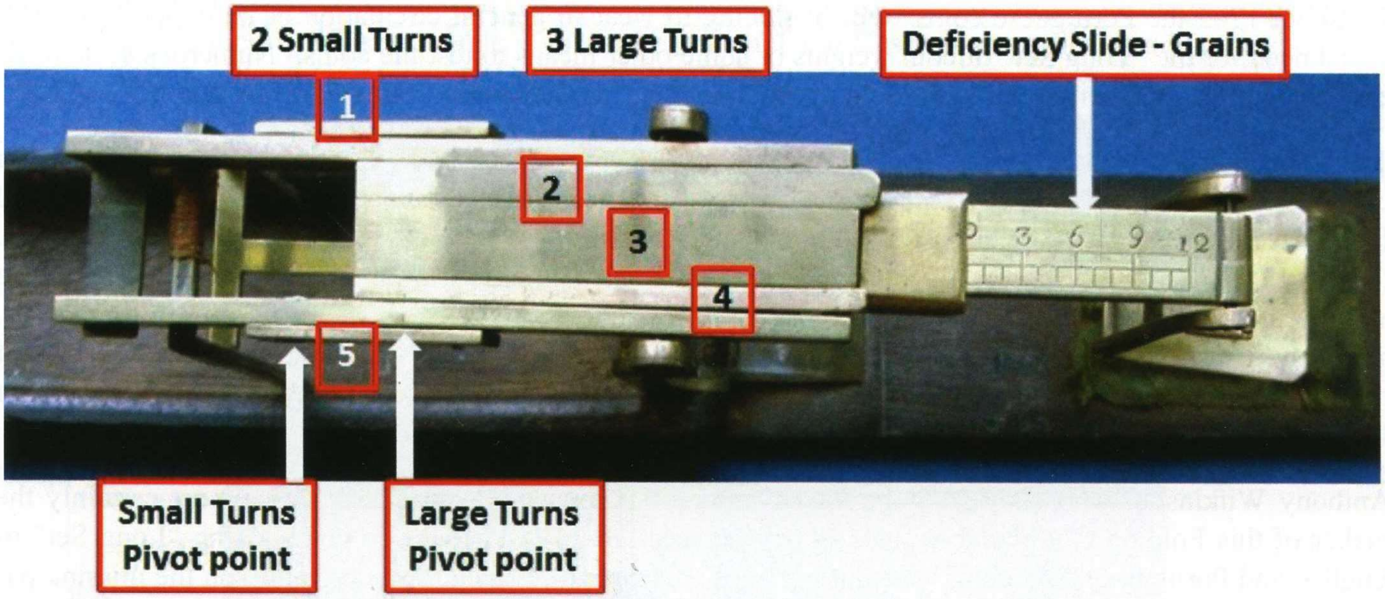


Figure 5. ▲▲ Close up view of the multiple turns (1-5), the Deficiency Slide and the pivot points.

With all the turns in towards the coin plate the balance is pre-loaded to 9s. The following Description of Operation of this balance has been done with the turns 1 to 5 adding Shillings (s) and Pence (d) to the tip weight of the balance when flipped to the out position, away from the coin plate. The two small turns add 1s 6d each or 3s when used together. When turn 2 is out it adds 18s to the tip weight. When turn 3 is out it adds 36s to the tip weight. When turn 4 is out it adds 9s to the tip weight.

The missing loose poise (which was determined by Mike to be 4s 6d), when added on the coin plate, subtracts 4s 6d from the test.[6]

To test the ¼ Guinea and ¼ Moidore a 9d adjustment on the load side is necessary. This is done by setting the Deficiency Slide to 4½ grains (valued at 9d).

All tests were performed with a complete "Long Set" of weights from a Francis Gray scale box illustrated above.

Figure 6. Description of Operation

- The Double Johannes is tested with turns 2, 3 & 4 out, adding 63s to the 9s pre-loading, to test for 72s. (no loose poise needed)
- The Johannes (Joey) is tested with turns 2 & 4 out, adding 27s to the 9s pre-loading, to test for 36s. (no loose poise needed)
- The Moidore is tested with just turn 2 out, adding 18s to the 9s pre-loading, to test for 27s. (no loose poise needed)
- The Guinea is tested with small turns 1 & 5 out, adding 3s, the turn 4 out adding 9s and the 9s pre-loading, to test for 21s. (no loose poise needed)
- The ½ Joey is tested with just turn 4 out, adding 9s to the 9s pre-loading, to test for 18s. (no loose poise needed)
- The ½ Moidore is tested with turn 4 out adding 9s to the 9s pre-loading, which with the loose poise on the plate with the coin subtracting 4s 6d, tests for 13s 6d.
- The ½ Guinea is tested with small turn 1 or 5 out, adding 1s 6d to the 9s pre-loading, to test for 10s 6d. (no loose poise needed)
- The ¼ Joey is tested with all turns in towards the plate which, with the 9s pre-loading, tests for 9s. (no loose poise needed)

- The ¼ Moidore is tested with the 1 & 5 small turns out adding 3s (that is 36d) and a 9d adjustment with a grain discrepancy slide setting of 4½ reducing the small turn contribution to 27d (that is 2s 3d) which with the loose poise (4s 6d) on the plate with the coin and the 9s pre-loading will test for 6s 9d.
- The ¼ Guinea is tested with the 1 or 5 small turn out adding 1s 6d (that is 18d) and a 9d adjustment with a grain discrepancy slide setting of 4 ½ reducing the small turn contribution to 9d, which with the loose poise (4s 6d) on the plate with the coin and the 9s pre-loading, will test for 5s 3d.
- The 1/8 Joey is tested with the loose poise (4s 6d) on the plate with the coin and all turns in, which with the 9s pre-loading tests for 4s 6d.

All eleven of the "Long Set" coins can be tested on this folding balance with only the need for one loose weight.

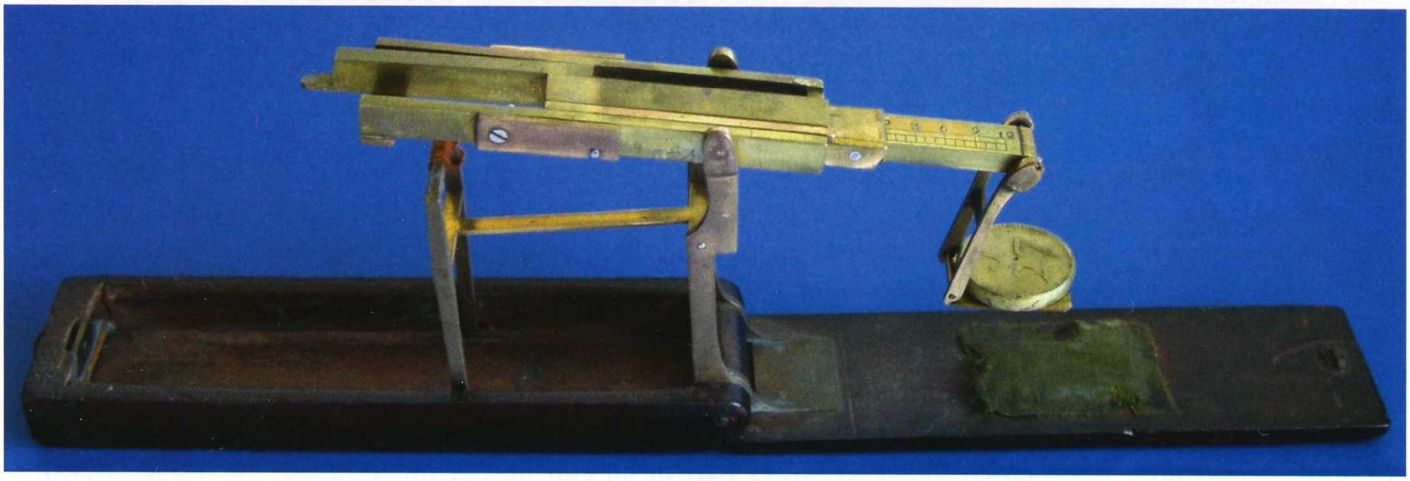


Figure 7. ▲▲ An example of a 27s Moidore test weight on the balance with turn 2 flipped out for testing a Moidore. Note the beam tipped slightly forward off of the poise rest indicating the correct value and weight.

To understand the versatility of this balance the authors would like to point out that three other English gold coins that were introduced after this design was created could be tested by it.

The first to note is the 1/3 Gold Guinea introduced in 1797 and struck each year until 1813, with the exception of 1805, 1807 and 1812. It remained in circulation until the Great Recoinage Law of 1816. The 1/3 guinea had a Least Current Weight of 2.72 grams or 1 dwt 18 grains with a value of 7s.

- The 1/3 Guinea is tested with the 1 & 5 small turns out adding 3s (that is 36d) and a 6d adjustment with a grain discrepancy slide setting of 3 reducing the small turn contribution to 30d (that is 2s 6d) which with the loose poise (4s 6d) on the plate with the coin and the 9s pre-loading will test for 7s.

The other two coins that could be tested are the Gold Sovereign (20s) and Half-Sovereign (10s) introduced in 1817.

- The Sovereign is tested with the 1 & 5 small turn out adding 3s (that is 36d) and the turn 4 out, adding 9s to the 9s pre-loading, and a 12d adjustment with a grain discrepancy slide setting of 6 reducing the small turn contribution to 24d (that is 2s) which will test for 20s. (no loose poise needed)
- The Half-Sovereign is tested with all turns in towards the plate which, with the 9s pre-loading, and a 12d (that is 1s) adjustment with a grain discrepancy slide setting of 6, tests for 10s. (no loose poise needed)

Wilkinson's Multi-Coin Folding Gold Balance was way ahead of its time!

Anthony Wilkinson was born in 1736, son of a (stone) mason.[7] He was listed as a gold balance maker in trade directories in 1787, 1788 and 1798, but is assumed to have been making them from about 1772. His invention was quickly copied by other makers in Lancashire, particularly by those accustomed to making small metal objects such as clock parts, gun parts and tools for the metal trades so prevalent in south Lancashire.[8]

He was assessed for land tax in Kirkby, near Liverpool, from 1781 to 1785 and in Ormskirk, Lancashire, from 1786 until 1803, when he died. His name appears on jury lists as a gold balance maker in 1792, 1797 and 1798.

He owned ten cottages, and two of his tenants were Stephen Houghton and Daniel Robinson, both later to be gold balance makers independently, Houghton taking over Wilkinson's business. Wilkinson had a team of men making his folding gold balances, and had them distributed by Peter Stubs of Warrington, who employed men to ride round the country selling hand tools that he made and goods made by other skilled Lancashire metal workers.[9]

Wilkinson's balances have survived in considerable numbers, probably reflecting a high output. The balances were almost all for weighing the guinea and half guinea,[10] but with many minor variations. For example, miniatures, brass cased, ivory cased, as part of an etui in a lacquered case, extra wide cased, with test weights, or with signed labels.

He even made one (recently discovered) with a sliding-poise instead of with turns, for the Guinea and Half-Guinea. Folding gold balances have, until now, been thought of as balances with turns (for the guinea and much later for the sovereign and a few Spanish coins). Now Wilkinson has confounded us again by making one with multiple turns, almost impossible to remember how to operate but capable of testing English and Portuguese gold coins to their Least Current Weight (LCW).

The sliding-poise Guinea balance and the multi-coin folding gold coin balance with its multiple turns must have been more expensive to make than Wilkinson's usual single-turn folding Guinea balances. They failed to sell in large numbers, judging from their extreme rarity.

The introduction in 1817 of the gold Sovereign and Half-Sovereign which were machine manufactured and stamped by the Royal Mint meant that the new Sovereign gold coin had a uniform weight, diameter and thickness. A Counterfeit Coin Detector (CCD) like the portable Sovereign Rocker Balance of Birmingham could be easily made to test to the LCW and provide gauge slots to check thickness and a simple diameter test with the machined platters, all to detect underweight or counterfeit coins. This was not a realistic option for the Guinea. The folding balances only tested to the LCW and were not CCDs.

Notes & References:

1. Portuguese gold more or less disappeared from the United Kingdom after about 1780 because worn gold coins were melted down after the Acts of 1772, 1774 and 1776, and sufficient new guineas minted, although Portuguese coins were officially valid until the Great Recoinage Law of 1816, after which, "*gold coin of this realm was to be the only legal tender for payments within the United Kingdom of any higher amount than forty shillings.*"

2. It was assumed by 1740 that British people would need to familiarise themselves with the current weights of moidores and Port pieces. See "*The Gentleman' and Citizen's Almanack for 1729-1740*". Even as late as 1777, arithmetic books included sections on how to convert Moidores and Joeys. See Robert Hamilton's "*An Introduction to Merchandize, containing a Complete System of Arithmetic...*" written in 1777.

3. See EQM 879-1086 for Norman Biggs' authoritative series of articles on coin weights and particularly pages 1079-1086.

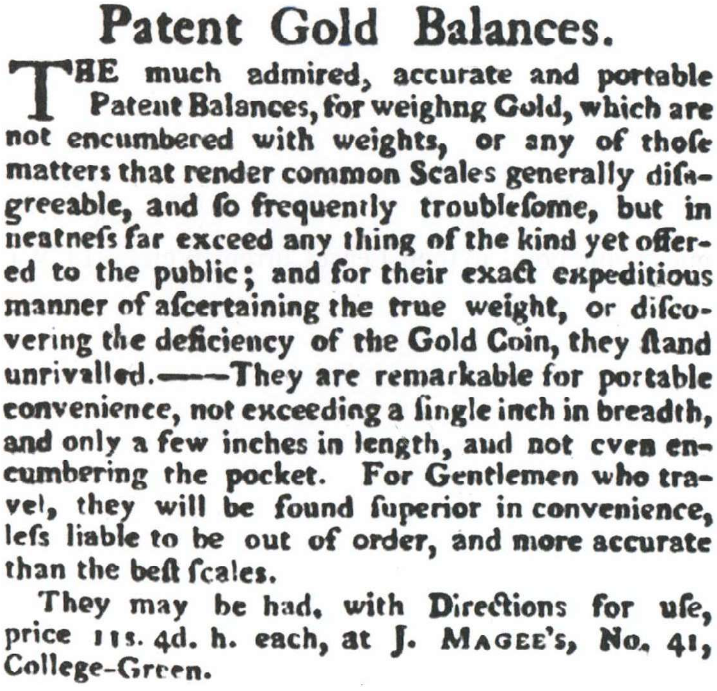
4. Francis Gray's table gave the weight of the guinea as 5 dwt 9 grains & 43/100th of a grain, which was officially the weight of a newly minted guinea (although in fact, guineas straight from the Mint could be any weight between about 5 dwt. 7½ grains and 5 dwt. 10 grains.) In practice, people accepted the Least Current Weight of 5 dwt. 8 grains as a guinea of full 21shillings in value. Both Francis Gray and Anthony Wilkinson used the Least Current Weight for checking the weight of a guinea, not the higher 5 dwt 9 grains.

5. Wilkinson claimed to be the inventor of folding gold balances in his advertisement of 1798 in Gore's General Advertiser.

6. Mike Foster worked out the values of each turn in Canada, while the Folder was in England! An amazing piece of mathematical deduction.

7. From the Crawforth Index and Michael A. Crawforth's book "Weighing Coins, English folding gold balances of the 18th & 19th century", published by Cape Horn Trading Co. Ltd, 1979.

8. Over the period 1772-1900, 88 names appear on folding gold balances. In many cases, we can be sure that the name was that of the maker, but without Michael Crawforth's skill at identifying each maker's work, we should assume that some of those names are those of retailers who bought the balances from the makers and stuck their own label in the boxes. See the advertisement of J Magee below.



Patent Gold Balances.

THE much admired, accurate and portable Patent Balances, for weighng Gold, which are not encumbered with weights, or any of thoſe matters that render common Scales generally diſagreeable, and ſo frequently troubleſome, but in neatneſs far exceed any thing of the kind yet offered to the public; and for their exact expeditious manner of aſcertaining the true weight, or diſcovering the deficiency of the Gold Coin, they ſtand unrivalled.——They are remarkable for portable convenience, not exceeding a ſingle inch in breadth, and only a few inches in length, and not even encumbering the pocket. For Gentlemen who travel, they will be found ſuperior in convenience, leſs liable to be out of order, and more accurate than the beſt ſcales.

They may be had, with Directions for uſe, price 11s. 4d. h. each, at J. Magee's, No. 41, College-Green.

Figure 8. ▲▲ J Magee's advertisement in the Dublin Evening Post on 28 April 1781. He calls them "Patent", but that was not official. He could use the word without fear of repercussions.

9. Peter Stubs recorded Wilkinson as a supplier of gold balances in 1782.

10. Wilkinson made balances with two turns after the introduction of the third of a guinea (7s) in 1797.

Letter Opener Scales, Part 5

BY JAN BERNING

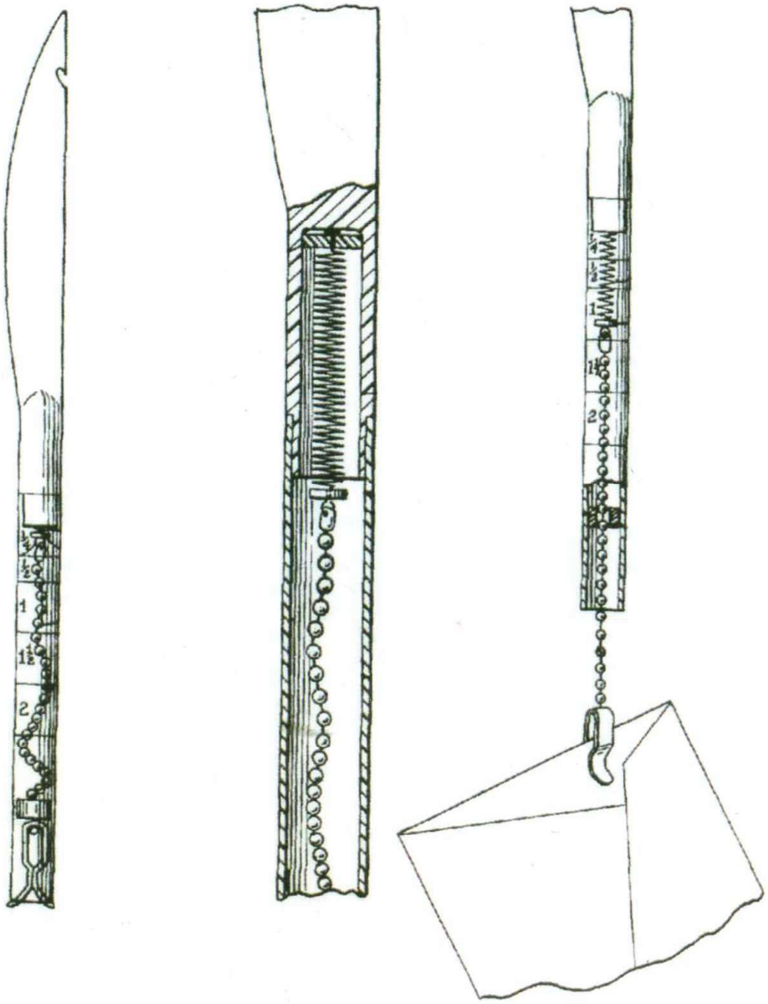


Figure 64. ≺≺ Patent number 2,783,989 was issued on March 5, 1957 to Joseph B. Biederman of Cincinnati, Ohio for a *Weigh Scale for Mail Parcels such as Letters and the Like.* The spring in this scale is attached to a chain which in turn is attached to a clip, all of which are stored in the handle of the letter opener when the scale is not in use. No examples are known and it is not known if any were produced.

Patent number 2,837,327, shown below, was issued on June 3, 1958 to Eddie L. Eiffert of Pomona, California for a *Letter Scale.* The patent reads in part *In use the device may be held by the handle whereupon the blade may be used to open envelopes…To use the device as a scale, the end closure is removed from the handle and placed upon a flat surface in the manner shown...The weight of the envelope is then approximated and the knife edge of the projection placed within the groove corresponding to that approximated weight.* The patent drawings suggest a 6 ounce scale graduated by ½ ounce.

No examples are known and it is not known if any were produced.

Figure 65. ⋎⋎ Patent number 2,837, 327 was issued on June 3, 1958 to Eddie L. Eiffert of Pomona, California for a *Letter Scale*.